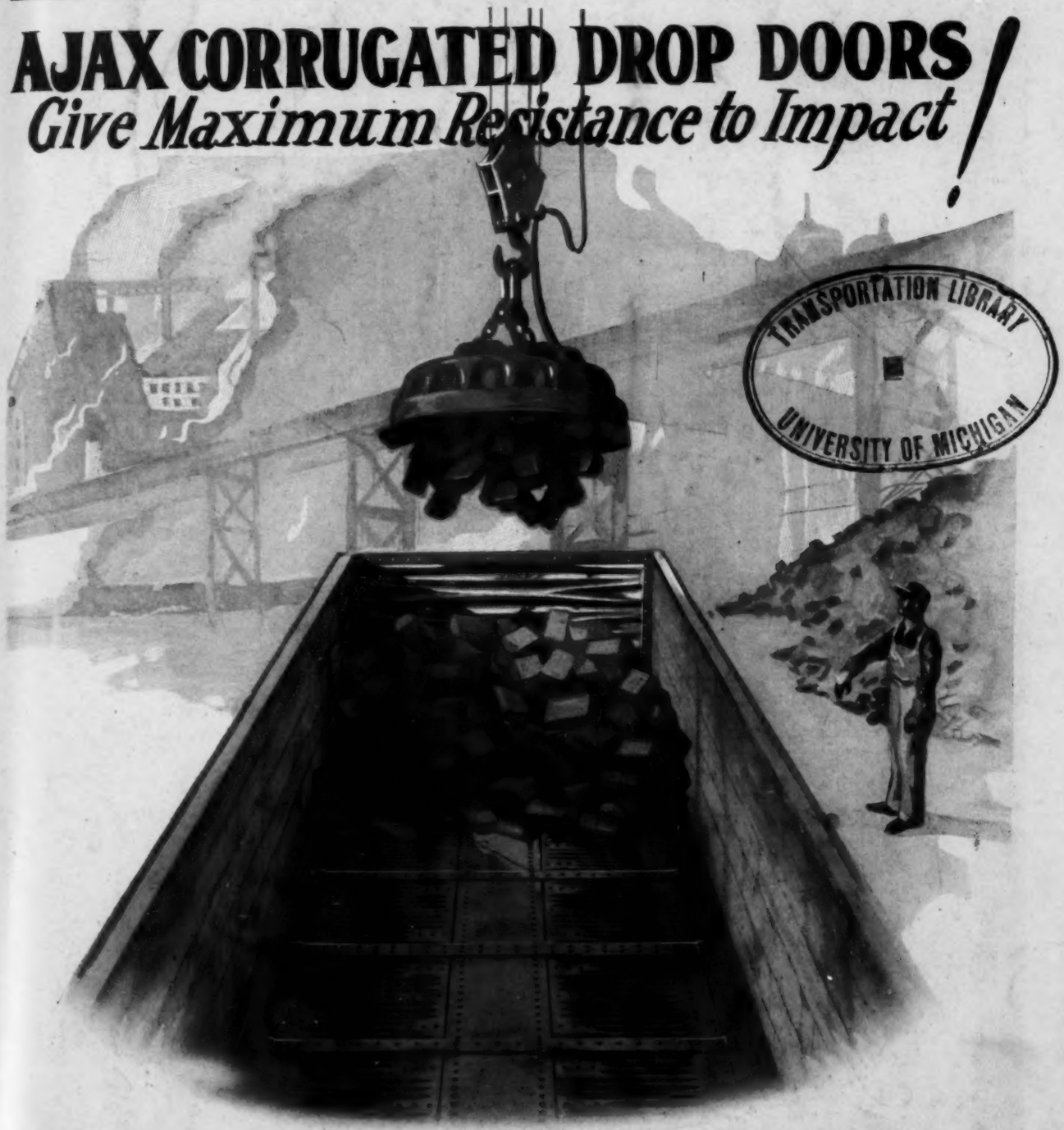
Railway Age

AND RAILWAY REVIEW

FIRST HALF OF 1928—No. 7 FEBRUARY 18, 1928 SEVENTY-THIRD YEAR

AJAX CORRUGATED DROP DOORS
Give Maximum Resistance to Impact!



TRANSPORTATION LIBRARY
UNIVERSITY OF MICHIGAN

UNION METAL PRODUCTS COMPANY

NEW YORK · CHICAGO · PHILADELPHIA · ST. LOUIS · WASHINGTON
RICHMOND · HOUSTON · SAN FRANCISCO · KANSAS CITY · MONTREAL

Quality
International offers you a quality tie of remarkable endurance which pays cash dividends in longer life, fewer tie renewals, lower maintenance and added years of dependable service.
All International ties meet A.R.E.A. specifications; sound timber, proper grading, careful seasoning and scientific treatment with the best creosote oil.
Contract now for International Ties
International Creosoting & Construction Co.
General Offices—Galveston, Texas
Plants: Texarkana Beaumont Galveston

Published weekly by Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa. Application made for entry of the second class at the Post Office at East Stroudsburg, Pa., January 14, 1928, under the Act of March 3, 1879.

Alphabetical Index to Advertisers Page 72 Classified Directory of Advertisers Page 68

Railway Age

Vol. 84, No. 7 February 18, 1928 Table of Contents Appears on Page 5 of Advertising Section

Bad-Order Cars in Yards

WHILE a marked improvement has been shown in the handling of loaded cars in bad-order through classification yards, there is still much that may be done in this direction. The old idea that "bad-order" is an excuse for almost any delay still persists in many terminals. Instead of getting out a car that is in need of repairs, when convenient, many yard supervisors have adopted the policy of giving such cars special handling and attention by reason of their disability. Instead of accepting the situation passively as unfortunate and unavoidable, they insist upon the prompt repair and movement of such cars. This idea is entirely consistent with the present knowledge of values. Bad-order cars *can* be repaired and moved out with reasonable promptness. The records made at Selkirk, Rutherford, Clearing and a number of other yards have demonstrated this. All that is required is proper care and organization, and the banishment of the old idea that the symbol "B. O." marked on any car movement report is a complete and satisfactory explanation for any and all delays.

Reducing the Uncertainties In Roadbed Construction

THE construction of railway roadbeds by excavating earth and rock from cuts and depositing the material so removed into embankments is an operation that is older than the railroads themselves, since it had its counterpart in the building of highways before railroads were dreamed of. In no phase of railway construction is there a greater accumulation of experience, and the knowledge thus gained has served as the basis for specifications governing standards of practice and the relations between the contractor and the railway. But in spite of this, there is still a considerable variation in the practices of different railways and a still wider difference in the character of results obtained. Settlement and sloughing of embankments and the sliding of cut slopes continue to give trouble and to cause heavy maintenance expenditures. It is true that difficulties of this kind may be ascribed in part to changes in the character and size of grading equipment and to the rapidity with which the work must be prosecuted in these days of enormous capital expenditures. Furthermore, it can be explained in large measure by the almost infinite variety of materials encountered, which makes exact tetermination of physical properties impracticable. But this very fact points to the need of more systematic study of the variables involved. There are those who will contend that this is a subject that will not lend itself to analytical determination, that it must be relegated to judgment based on experience. But even the cataloging of the results of accumulated experience should be fruitful of a better general knowledge. Beyond this is the possibility of laboratory investigations for the purpose of developing a possible relation between the behavior of materials in place and their reaction to laboratory tests.

"One Swallow Does Not Make a Summer"

THE truth of the familiar statement quoted above is well established. It is equally true that the testing of a single new appliance on a locomotive or a car or in the repair shop does not permit the drawing of accurate conclusions. Of every new device, one must first be built, applied in service on some road, and the "bugs" worked out. If it passes this stage successfully, there is reasonable assurance that the device has merit. The question is: Should another road which becomes interested purchase a single unit of the device, place it in service and expect to determine definitely how well operating requirements are met on that particular road? While there may be some exceptions, dependent upon the character of the device, it may safely be said, as a general rule, that definite conclusions cannot be drawn fairly from the testing of a single unit. Take, for example, a single new or improved locomotive appliance applied for the first time on a railroad. It is essentially an orphan, likely to receive indifferent if not harmful treatment at the hands of unfamiliar railroad men; it cannot be serviced economically by the manufacturer; and, in a competitive test it does not get a fair chance because of the lack of average conditions. If a single locomotive equipped with this device is tested against nine others of even the same class, it is practically impossible to prevent individual peculiarities of the locomotive itself, or the conditions under which it operates, from largely discounting the effects of the device. Obviously railroads must investigate new developments with caution, but if an idea, once past the initial experiment stage, is worth trying at all, the interests of both the railroad and the manufacturer will be served best if it is tried on such a scale that average conditions will obtain, that the amount of the investment will attract the interest of all concerned and a fair test be assured.

Selling the Public on Railway Safety

CANNOT more capital be made of the safety of travel by rail as compared to some of our more recent modes of transportation? Declining passenger traffic is the result largely of private automobile and motor coach competition. Does the average traveler know how much

more safely he may reach his destination by rail than by any of the other transportation mediums? It would seem that he has not been enlightened sufficiently as to the safety of present-day railway operation. There is an indication, however, that more traffic officers are seeing the opportunity and are calling attention to their own road's safety features. The Chicago, South Shore & South Bend railway, an electric interurban line with automatic signal protection, recently prepared a window display for its Chicago traffic office, which directed attention to the automatic signal protection. A working installation of automatic signals, operated in conjunction with a miniature electric railway system, attracted a great deal of attention from passersby. There are many traffic offices in the United States without any window displays other than bright colored cardboard signs calling attention to special week-end rates, or to low summer excursion fares, which could adopt similar expedients to advantage. Automatic train control has aroused public interest and a number of railroads having this protection on parts of their lines, have not been slow to tell the public about it, either by display advertising in the newspapers or by news stories. Recent passenger advertisements of the Chicago & North Western and the Chicago, Rock Island & Pacific, mention, among other "selling points," their automatic train control protection. The Chicago & Eastern Illinois, which has been advertising its "Dixie Flyer" over the radio, has not overlooked mentioning the train control protection. On none of the three roads referred to, is automatic train control or train stop protection installed on all of the main lines of the respective roads, but enough is in service to justify bringing it to the attention of the public.

Interstate Regulation the Biggest Motor Transport Issue

INDICATIONS continue to accumulate that the greatest single issue connected with motor transportation this year will center upon the proposed federal regulation of interstate motor coach and truck common carriers. The Interstate Commerce Commission examiner's report on the motor transport investigation of that body, the hearing on this report held in Washington on February 10, the introduction of two bills in Congress providing for certain forms of interstate regulation of motor carriers, and other developments of somewhat less national significance, together with the widespread interest which these events have aroused, leave no room for doubt that interstate regulation will be the most important and most widely discussed topic of the year among motor transport men. Something in the nature of a finish fight on this question is expected during the present session of Congress, with results which no one can forecast with any degree of assurance at this time. On the surface, at least, the independent operators of motor coaches and trucks appear at this time to be strongly organized and active. Motor truck operators, supported by the National Automobile Chamber of Commerce, have consistently and strenuously opposed any regulation whatever of their interstate operations. Independent motor coach operators, supported by the Bus Division of the American Automobile Association, formerly declared themselves in favor of regulation of interstate motor coach operation, but now appear to be hedging considerably on the provisions of the law which they would like to see passed, so that the surmise now appears to be justified that these operators do not want a regulated industry as much as they want protection from the competition of newcomers in the field. The railways, on the other hand, as indicated by the expressions of Colonel A. P. Thom of the Association of Railway Executives, appear to favor full regulation of both motor coaches and trucks operating across state lines. Interstate regulation of motor carriers, a matter which has a vital bearing upon the welfare of the railways and upon their plans for motor vehicle operation, merits the close attention of every railway officer.

A British View of Publicity and Advertising

THE problem of railway public relations and advertising work in Great Britain and America can not vary greatly. We infer this from a careful persual of a scholarly treatment of the question, from an English point of view, presented as an Institute of Transport lecture by J. Blumenfeld Elliott, assistant to the general manager of the Southern Railway (England). This company a few years ago had to face a most unfavorable public opinion. It had extensive improvements under way which temporarily interfered with perfect service and, moreover, was still working on the problem of combining several companies into one. Angry letters from dissatisfied patrons appeared in the London papers by the hundreds. That was in 1924.

Since then the change has been revolutionary, and not a little credit must be given to an admirable publicity and advertising campaign, the principles underlying which are set down by Mr. Elliott in his lecture published in the January issue of the Journal of the Institute of Transport (15, Savoy street, Victoria Embankment, London, W. C. 2).

Mr. Elliott begins his address with the statement that railways have heretofore had to concern themselves solely with *manufacturing* transportation; now they must learn to *sell* it as well, and selling transportation is not greatly different from selling shoes or soap. Second only in importance to the realization that transportation must be sold, is the fact that the service offered must be of the best—"advertising seldom makes the public buy a bad article twice."

Public relations work, as every railroad man knows, has its two sides—advertising and publicity. On the latter side, it is also generally known, the day of the "press agent" whose play was entirely with the spectacular and whose every sentence was propaganda has passed. The first function of a public relations campaign is to maintain an office where newspaper men can come to get the information they actually want—rather than an office the primary function of which is to force on the newspapers something they do not want, while denying them what they seek. These principles are well recognized in this country, but an amplification of them drawn from experience across the Atlantic is edifying. It leads to a conviction that there are sufficient fundamental principles in the work which hold good under all conditions and around which a minor, though important, science may be built up.

In railway advertising Mr. Elliott's problems, and therefore his principles, are not quite so generally applicable. Yet here also his testimony has much of interest and value when applied to our conditions.

For instance, he points out the fallacy of the lack of

advertising where non-competitive territory is concerned. "If one wants to go to Brighton, one has to go by the Southern—why advertise?" Mr. Elliott says that in the first place the prospective passenger probably will not be going to Brighton unless the attractions of that place have been effectively presented to him by advertising. In the second place, even if he is going to Brighton, it is by no means certain that he will go by rail rather than by motor coach or in his own car.

Substitute for the name of Brighton some American resort and the object lesson will apply to us with equal—or even greater—force, because automobile competition in England is but a fraction of what it is with us. We feel that the list of competitors for business in "non-competitive territory" could be amplified. For instance, the prospective passenger does not even have to travel at all. He can instead buy a new radio or make the initial payment on a piano or cheap automobile—and there can be no question but that such luxury commodities are far more widely advertised than is railway travel.

Advertising should be done judiciously, to secure the highest return from every cent spent. This Mr. Elliott dwells upon and his statements are even more strongly applicable here—where passenger business tends to be less remunerative. "The right time, the right paper, the right page, the right space, the right illustration and copy, and the right type—all these things have to be considered before press advertisements see the light of day." This suggestion, although obvious, cannot well be over-emphasized when funds are not unlimited. The practice of making up a list of mediums and using the same "copy" in all of them, regardless of their varying character and the equal variations in their readers, is plainly wasteful. Care in location is especially necessary to avoid waste in poster advertising—it is folly to advertise de luxe tours in a slum neighborhood and a cheap coach excursion in an exclusive residential suburb. Appropriations should be liberal, but they should be most carefully disbursed.

Railroad public relations work has made great strides of recent years and railroad advertising is now making headway. Contributions to the science—formulating its known rules—will make the work more effective. Treatment such as Mr. Elliott has given the subject will, therefore, interest specialists in this line of railroad work everywhere.

The Results of Tie Treatment

IN presenting the report of the Committee on Tie Service Records at the recent convention of the American Wood-Preservers' Association, C. F. Ford, chairman, stated that the 26 roads whose tie renewal statistics for 1926 were presented in the report included approximately 200,000 miles of all tracks, or about half the mileage of the United States, and that a comparison of these figures with those of the previous year showed an average reduction in renewals in the one year of six ties per mile of track. This indicates a reduction of 1,200,000 ties for the roads reporting. If similar figures were available for all of the roads of the country, the reduction in tie renewals for the one year would undoubtedly exceed 2,000,000, which at $2 per tie inserted in the track, represents a saving of $4,000,000.

Since the two years compared were both characterized by liberal maintenance programs with the advantage, if any, in favor of the latter year, this result cannot be attributed to any policy of retrenchment. Likewise, it includes roads which have only recently started to use treated ties and which are, as yet, securing little or no benefit from this practice, as well as those which are pioneers in this and are now securing the maximum savings. Taken as a whole, these roads may, therefore, be considered a fairly typical cross-section of the railways of the country in this respect. As such, they can be considered fairly representative of the development that is taking place in the use of cross ties.

This development is being reflected in a number of ways. From the standpoint of the cross tie producer it is leading to the elimination, or, at least, to the curtailment of activities of those companies which produce and sell ties untreated. In their place are coming larger firms which are building treating plants or perfecting affiliations with treating plants through which to treat the ties they produce and sell. This tendency may be expected to continue as the use of treated ties becomes more universal, resulting ultimately in the elimination of the small producer, at least in so far as direct railway negotiations are concerned.

This tendency may also be expected to continue to reflect the steadily decreasing requirements of the railways for cross ties for some time, a tendency which has already reduced the demands at least twenty million ties annually and may reasonably be expected to reduce them still further by an equal amount before a state of equilibrium is reached on the basis of the universal use of treated ties.

A Record in Fuel Saving

STILL further increases in the efficiency with which railway fuel is used are shown by reports of current operating statistics, wherein it appears that the fuel consumption per thousand gross ton-miles in freight service amounted to only 129 lb. in the first eleven months of 1927, as compared with 135 lb. in the corresponding period of the previous year, and 161 lb. in the same months of 1921. While the foregoing figures are indicative of a remarkable improvement in the efficiency of fuel use, the actual meaning of this improvement may be better visualized if these figures are converted into statistics which show the amount of work performed by each pound of fuel consumed.

The railways of the country, in the first eleven months of 1927, increased the efficiency of their fuel use to the extent that a single pound of coal was sufficient to move a ton of freight and equipment a distance of 7.74 miles. A comparison of this 1927 eleven-month average with figures for corresponding months of previous years indicates, of course, that the amount of work which the railways got out of each pound of coal used in freight service was greater in 1927 than in any previous year. While the current 1927 figure is 7.74 ton-miles per pound of coal, the corresponding results were 7.40 ton-miles in 1926; 7.22 in 1925; 6.77 in 1924; 6.24 in 1923; 6.24 in 1922, and 6.23 in 1921.

In other words, a pound of coal in railway freight service is now moving a ton of freight and equipment about a third of a mile farther than it did in 1926; a half mile farther than in 1925; a mile farther than in 1924, and a mile and a half farther than in 1921. The current figures of fuel consumption thus show that out of each pound of coal used by freight locomotives the railways are now getting 5 per cent more work than in 1926, 7 per cent more than in 1925, 14 per cent more than in 1924 and 24 per cent more than in 1921.

The fuel used by the railways in freight service in the first eleven months of 1927 was approximately 74,000,000 tons. If there had been no increase in efficiency since 1921, the 1927 freight traffic would have required the consumption of about 92,000,000 tons of coal. Better utilization of fuel, therefore, in 1927 as compared with 1921, resulted in a saving in coal in freight service in eleven months alone amounting to 18,000,000 tons. This is sufficient to heat a city the size of Chicago for more than two years.

Senate Criticism of I. C. C. Rate-Making

THE Interstate Commerce Commission is just now the target for some of the criticism which used to be leveled at the railways for their policies of rate-making and which seems to be the inevitable lot of those who have to decide between conflicting interests. Most of the fuss in this instance is the result of the agitation of the southern district coal interests, whose political representatives are protesting loudly against the commission's handling of the lake cargo coal rate case, just as some of the Pennsylvania coal and political interests were doing the same thing a year or so ago when the shoe was on the other foot.

The humorous aspect of the case, however, at least so far as the recent debates on the subject in the Senate are concerned, is the way in which senators from other parts of the country join in the criticisms of the commission for exactly opposite reasons from those voiced by those from the coal states. One group is accusing the commission of abusing its powers and setting itself up as the arbiter of commercial prosperity of competing sections, on the ground that it is giving too much weight to considerations of distance in its adjustment of freight rates, while another is complaining because the commission has allowed the factor of distance to be accorded less weight in some other adjustments.

Of late years the commission has been displaying an increasing tendency to solve complicated problems of rate adjustment affecting a wide territory and many conflicting interests by prescribing mileage scales of rates, particularly as to class rates, and while it is receiving some praise for its efforts from the advocates of a "scientific" system of rate-making and those who admire beautifully simple tariffs, it is also being condemned by the representatives of communities who have been adversely affected by the changes.

In the lake cargo case, which has been before the commission off and on since about 1912, there is also involved the question of the extent to which a producing community should be allowed to profit by the advantage of its nearness to the markets, or to which railroads should be allowed to go in reducing rates to enable a more distant source of production to compete in the same market and incidentally furnish them with some tonnage. The rates on lake cargo coal from Pennsylvania and Ohio mines to the lake ports were lower than those from the southern district mines, partly because the distance from the northern fields was less, and there has been for some years a controversy as to what the relation should be. The northern mine operators, having lost much of their business to their competitors, particularly during the time when they were having labor troubles, asked for a reduction, basing their case largely on evidence relating to the cost of transportation, and when the commission in 1925 rendered a decision on that basis that the rates were reasonable, a senator from Pennsylvania raised a loud wail because Pennsylvania had not had a representative on the commission.

A Pennsylvania man was appointed on the commission, and, largely as the result of efforts of the senators from the southern coal states, he was not confirmed, but the next time the commission rendered a decision it reversed itself. After the Hoch-Smith resolution was passed, directing the commission to consider the conditions prevailing in a given industry, the northern fields renewed complaint and the commission in 1927 ordered a reduction of 20 cents a ton in their rates, basing its conclusion partly on the ground of the resolution, because part of the coal industry was in a depressed condition, and partly on the basis of a reconsideration of the cost of service evidence. Without making any specific findings as to the relation between the rates, the commission expressed the opinion that the southern lines should not meet the reduction, but after some pressure from their coal shippers they promptly filed tariffs which would have restored the old differential. The commission suspended the tariffs pending an investigation, which has recently been concluded, and the case is now before it for another decision.

So now it is the southern coal interests and their senators who are protesting, and trying to prevent the confirmation of the President's reappointment of Commissioner Esch, who, like the commission's majority, has voted in two different ways in the case at two different times, but the last time voted to reduce the rates from Pennsylvania. Possibly some of the protest, while the case is pending, is due to a belief that Senator Reed's tactics had some effect before.

A minority of the commission in the last case indicated a belief that the commission was really trying to equalize prosperity in the coal business instead of merely deciding a rate case and that is the view of the matter taken by the southern coal states. The peculiar part of it is that they have sought to enlist reinforcements among senators not particularly interested in lake cargo coal by spreading the idea that the decision is the result of a new policy of the commission to make rates on a mileage basis and thus zone the country in such a way as to keep the more distant producers out of the market.

The Senate on February 9 adopted a resolution almost insulting in its terms calling on the commission to furnish Congress with copies of decisions in which it has been "influenced" by competitive advantage or disadvantage of sections and to state its authority for claiming that it was "granted power to equalize prosperity." And a senator from Florida approves the resolution because he thinks it may influence the commission not to allow California oranges a rate to enable them to compete in the East with those from Florida, while a senator from Nevada does so on the ground that the commission has allowed rates to be made on a lower basis for a long haul than for a short haul.

Of course, the commission cannot change a rate for any reason without affecting competitive relations to some extent, and it might have some difficulty in giving a truthful answer as to how much it has been "influenced" by competitive conditions, but it is apparent that even a "scientific" plan of rates would not meet with universal commendation.

Yard Operations Made Safer By Floodlighting

Elgin, Joliet & Eastern completes two extensive yard floodlighting projects at East Joliet, Ill., and Gary, Ind.—Ninety-six 1,000-watt floodlight projectors are used

Left—One of the Steel Towers

Right—Bird's Eye View of East Joliet Yard

TWO recent floodlighting installations on the Elgin, Joliet & Eastern, are noteworthy for a number of reasons. In the first place a number of floodlight projectors were submitted to the Electrical Testing Laboratories, New York, for photometric tests in accordance with the procedure outlined in the 1927 report of the Committee on Illumination of the Association of Railway Electrical Engineers. A second feature of the E. J. & E. installation is the large number of projectors, 43 at East Joliet, and 53 at Kirk Yard, Gary. A third feature of the installations is the increased safety effected in yard operation at night due to the increased illumination. Nearly all yard engines find it convenient to operate without headlights while in the floodlighted area. The approximate first cost of the installation at East Joliet was $18,000 and at Kirk Yard, Gary, Ind., $22,000. The average yard illumination intensity at East Joliet is about 0.18 footcandles, while the energy consumption is about 0.014 watts per sq. ft.

Operating Features

Since the floodlighting installation has been placed in service at East Joliet, yard enginemen have operated without the aid of locomotive headlights, eliminating the blinding glare of such lights and increasing the safety of yard operation as a result. It is planned later to omit the switch lamps and if this is done a saving in maintenance is expected. The primary function of the yard lighting installation is, of course, to increase the safety of employees and to reduce the damage to equipment. Other expected benefits include the acceleration of yard operation with a consequent saving in labor and fuel. Not enough time has elapsed to determine yet whether switching operations will be expedited, but the morale among yard employees has been noticeably improved and numerous expressions of appreciation of the greater safety thus afforded have been received by the management. The yard forces appear to be interested in increasing the speed of yard operation solely because of the better lighting of the yard at night. Theft losses have always been low at this yard and it is not expected that any sizeable reduction in them will result because of better lighting.

Photometric Tests of Projectors

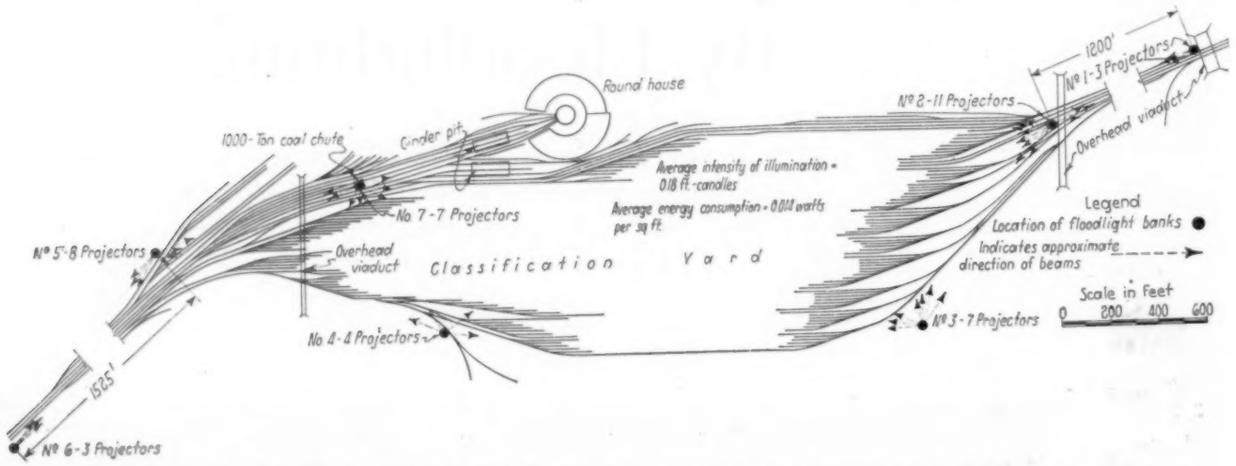
Recognizing the benefits that would accrue from an engineering solution of the problem of applying floodlights to a railroad yard, the Elgin, Joliet & Eastern asked a number of manufacturers to submit samples for photometric tests. This plan was adopted after realizing the difficulties involved in selecting floodlighting units with respect to their illumination characteristics on the basis of the then existing illumination data relating to different types of floodlight projectors. Such difficulties were believed to be due largely to the lack of a recognized standard test procedure for photometering floodlight projectors. It was further believed that equally competent engineers would obtain widely different results while testing floodlighting units, if they worked independently of each other and without any specific method of procedure. Believing that the most economic selection could be made by following the procedure outlined in the report of the Committee on Illumination of the Association of Railway Electrical Engineers, all the manufacturers were asked to sub-

mit samples to the Electrical Testing Laboratories, New York.

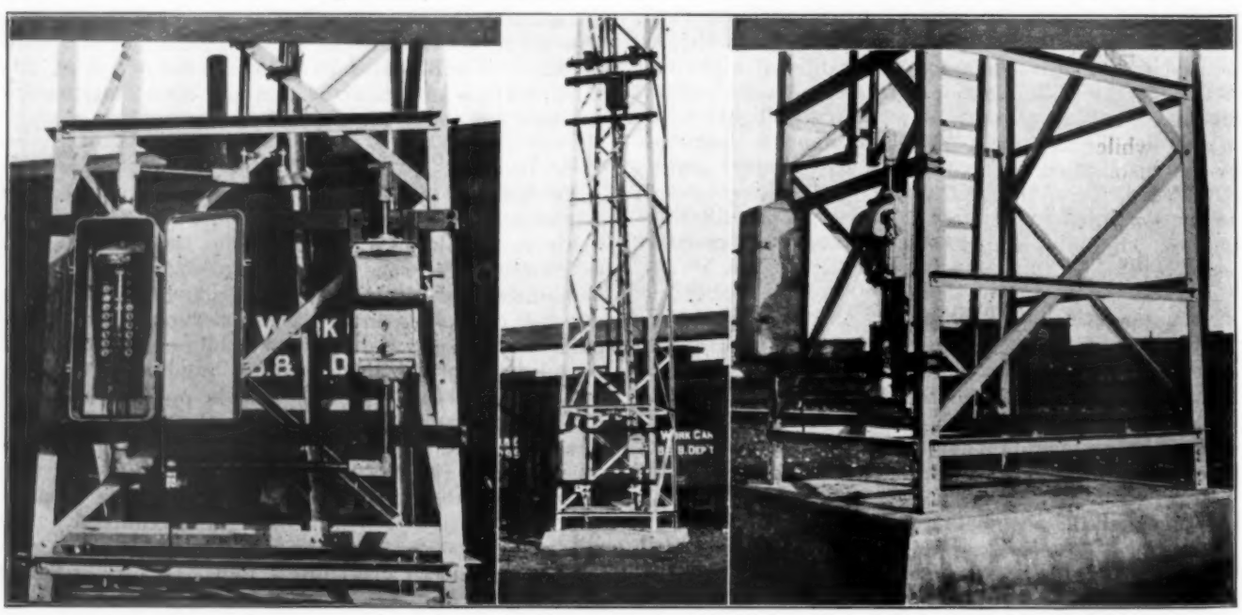
It was realized, of course, that field tests have been used in the past to study the relative merits of floodlighting units from an illumination viewpoint, but it was believed that while such tests are of some value in visualizing the effects of different types of light distribution, they could not be relied upon to compare the relative efficiencies of different projectors for a given lighting purpose. Hence, a laboratory test was believed essential.

As a result of these tests it was decided to install 20-in. projectors of Crouse-Hinds manufacture, using 1,000-watt Mazda lamps having PS-52 bulbs and Type C7A filaments. These floodlighting units, Type-LCE 20, have crystal glass reflectors and are fitted with cast aluminium-alloy cases, dust-tight and weatherproof, with both clear and diffusing lenses, the latter to increase the beam spread. The lamp-focusing mechanism is of the one-way type hand operated by a capped wing nut on the outside of the case. Two adjustable stops are provided on the projector so that it may be tipped completely over, or turned around for relamping and cleaning and later returned to its original setting. The convex glass lenses are of either the clear or diffusing type and in each case the lens is mounted in a cast aluminium-alloy door frame having two hinges at the top. The door and case fitting is ground to make it as nearly dust-tight as practicable. A wire connection box with cover and threaded hub and also binding posts for convenient fastening are provided on the rear of the case. The number of units on top of one tower varies from 3 to 11, depending on the tower location. They are mounted on steel plates secured to the top and bottom members of the platform on top of the tower.

The various units were "trained" approximately as indicated in the accompanying yard plan. The final adjustments were made at night to obtain the desired light distribution. The units were "trained" to give a high average intensity along the switching leads, a higher intensity where switching movements are heavy, and a lesser intensity over switches less frequently used.



Location Plan of Floodlighting Towers at East Joliet Yard—Arrows Show Approximate "Training" of Projectors

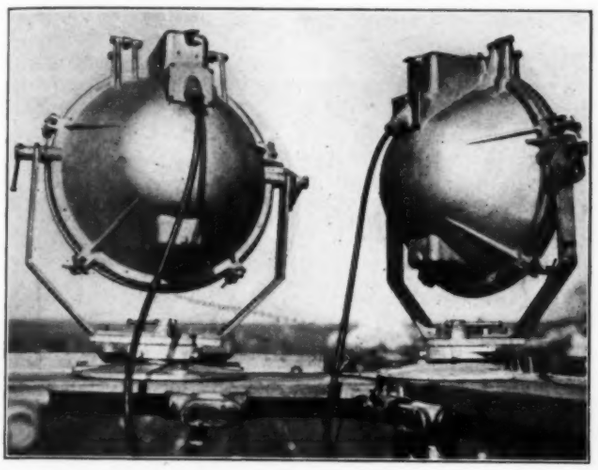


Left—Fuse Panel in Cast Iron Box and Enclosed Switch for Controlling Overhead Projectors; Center—Transformer Mounted on Tower; Right—Method of Mounting Fuse Box and Safety Switch to Floodlight Tower

Other parts of the yard away from the switches were illuminated a little above the intensity of bright moonlight.

Part of Energy Purchased on Flat Rate Basis

All of the electrical energy for lighting the East Joliet yard is purchased from the Public Service Company of Northern Illinois, but under two different contracts. Some of the towers are connected to the outdoor substation serving the E. J. & E. shops, and thus are furnished with energy under the power contract covering shop needs. Two of the other towers are connected direct to the Public Service Company's line, the energy being purchased under a flat rate of $17 per month, per lamp, which includes the cost of all lamp renewals.



Floodlighting Units Are Aluminum Jacketed and Have 1,000-Watt Mazda Lamps

All of the floodlight projectors are mounted on 84 ft. structural steel towers made of galvanized angle and channel sections bolted together with the exception of seven projectors mounted on a platform secured to a 1,000-ton concrete coal chute. The towers at the extreme east and west ends, respectively, of the East Joliet yard, designated as towers No. 1 and No. 6 on the accompanying plan, are the two which are furnished energy by the Public Service Company under the separate flat rate contract, which includes also such service as lamp renewals and setting of time clocks. Each tower is equipped with a Tork eight-day clock which the electric light company has undertaken to maintain and operate. From there the energy is transmitted over a 2,300-volt open wire line to each of the towers where it is stepped down to 115 and 230 volts for the projectors. The step-down transformer is mounted on the tower together with primary disconnecting fuses and lightning arresters. (The entire installation is wired to provide for a 50 per cent increase in current if it is desired later to increase the yard illumination.)

All of the structural steel towers were assembled by the bridge and building forces of the E. J. & E., using the American Bridge Company's standard floodlighting tower materials. The towers are approximately six feet square at the base and three feet square at the top, the corner members being of angle iron section. All structural members of the tower are bolted together. The concrete foundations are about six feet deep by ten feet square at the base, and have structural steel reinforcing members embedded in them. For lightning protection and employee safety, all towers and conduit systems are grounded.

Kirk Yard Installation Has 53 Projectors

In fixing the location of floodlighting towers at the Kirk Yard installation at Gary, Ind., greater difficulties were encountered due to the presence of a more complicated track layout and yard buildings. This yard is approximately three miles long and is narrower than the East Joliet yard. The result is that the yard illumination is not as uniform as at East Joliet. Most of the projectors are trained to flood the tracks longitudinally or approximately so. Towers and projectors are exactly the same as installed at East Joliet, although the method of erecting the structural steel towers was different. They were assembled on the ground and raised to position with the aid of a locomotive crane. At a later date, accounting department figures will be available as to whether this method of erection is any cheaper than the scheme of vertical assembly as followed at East Joliet.

Argument on Motor Transport Regulation

REGULATION by federal authorities of motor coach operation in interstate commerce on the highways was generally favored in the oral argument before the Interstate Commerce Commission on February 10 on the proposed report by Attorney-Examiner Leo J. Flynn recommending a plan of legislation for the regulation of motor vehicle operation in which members of state commissions would act as agents of the federal commission.

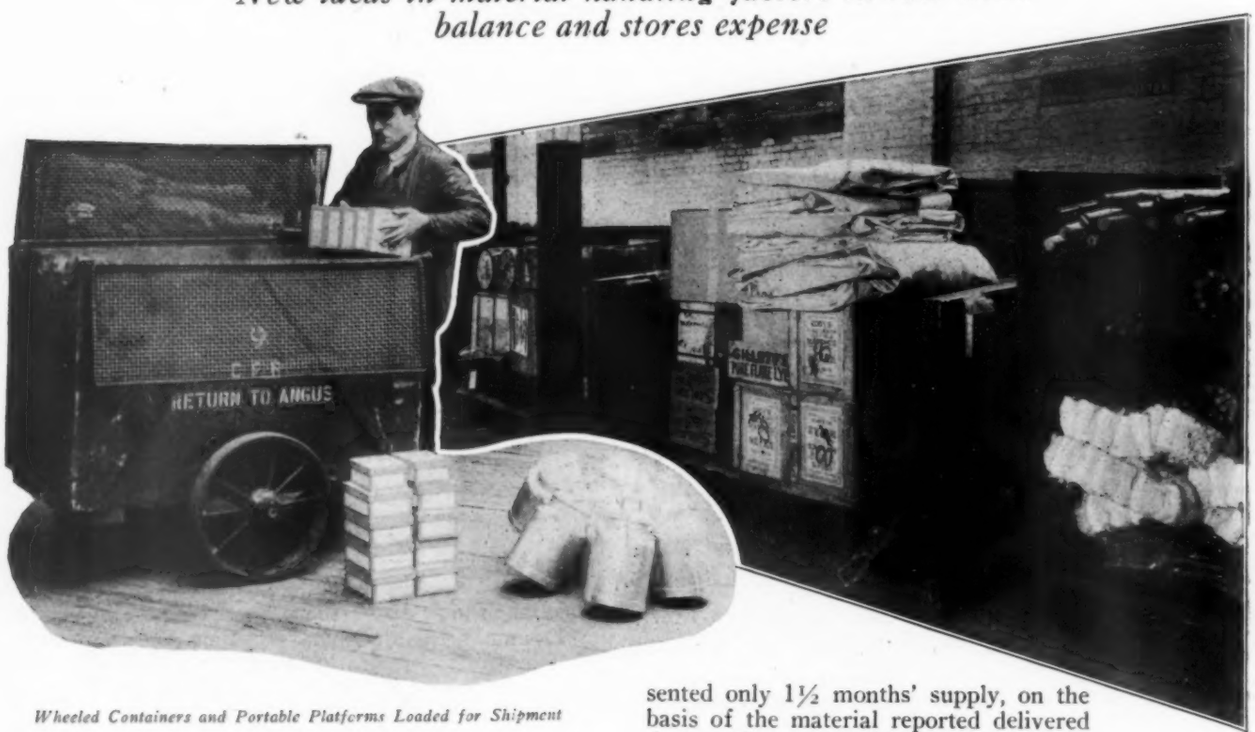
Regulation of motor truck transportation, however, was vigorously opposed by representatives of the manufacturers and operators of trucks, on the ground that it would hamper the development of a new industry and that there is no demand for it among shippers. This opposition was so pronounced that at the end of the argument Alfred P. Thom, general counsel of the Association of Railway Executives, who had advocated regulation of truck transportation, suggested that it might be well for the present to require only a system of federal regulation of motor trucks operated for hire in interstate commerce, with such reports as the commission might deem advisable, and that the commission continue its study of that subject without delaying its recommendations to Congress relating to the regulation of motor coach transportation.

A more detailed report on the oral argument on this report will appear in the Motor Transport Section, to be issued with the *Railway Age* of February 25.

RESEARCH GRADUATE ASSISTANTSHIPS.—Applications for appointments to research graduate assistantships are now being received by the director of the Engineering Experiment Station, Dean M. S. Ketchum, University of Illinois, Urbana, Ill. These assistantships, for each of which there is an annual stipend of $600 and freedom from all fees except the matriculation and diploma fees, are open to graduates of approved American universities and technical schools who are prepared to undertake study in engineering, physics, or applied chemistry. Appointments to these assistantships must be accepted for two consecutive collegiate years of 10 months each, at the expiration of which period, if all requirements have been met, the degree of Master of Science is conferred.

Canadian Pacific Puts Supply Work on Wheels

New ideas in material handling factors in low stock balance and stores expense



Wheeled Containers and Portable Platforms Loaded for Shipment

THE Canadian Pacific Lines East of Fort William, Ont., operate on a remarkably small inventory for the business done and reports a rate of stock turnover and costs and methods of handling material which challenge attention. Graphical charts of the stock on hand each month at every store point, as well as other charts helpful in control work, have been consistently brought forward and watched each month on this property since 1906. They show that, while stock values sky-rocketed during the war as on other roads on the continent, values have by no means been habitually allowed at the elevation reached in 1921, and also that with no change in stores organization, deflation was effected quickly and completely.

Excluding 1921, the rate of stock turnover has increased steadily since 1917. At the end of July, 1927, the last month of record when these notes were taken, the material in stores custody on the Lines East represented only 1½ months' supply, on the basis of the material reported delivered during the month. Material on hand at Montreal, where all slow moving and surplus stocks are carried, represented only 1.7 months' supply and material on hand at one of the large division stores represented only one month's supply, on the basis of its disbursements during the month. Stores expense was only $1.18 per $100 of material used in 1927, considering the total stores pay roll on the Eastern Lines of 312 men, including clerical forces and officers, but not accounting which was undertaken by the accounting department at approximately one-half of one per cent per $100 worth of material disbursed.

The Trailers in Terminal Work Are Unusually Large and Strong

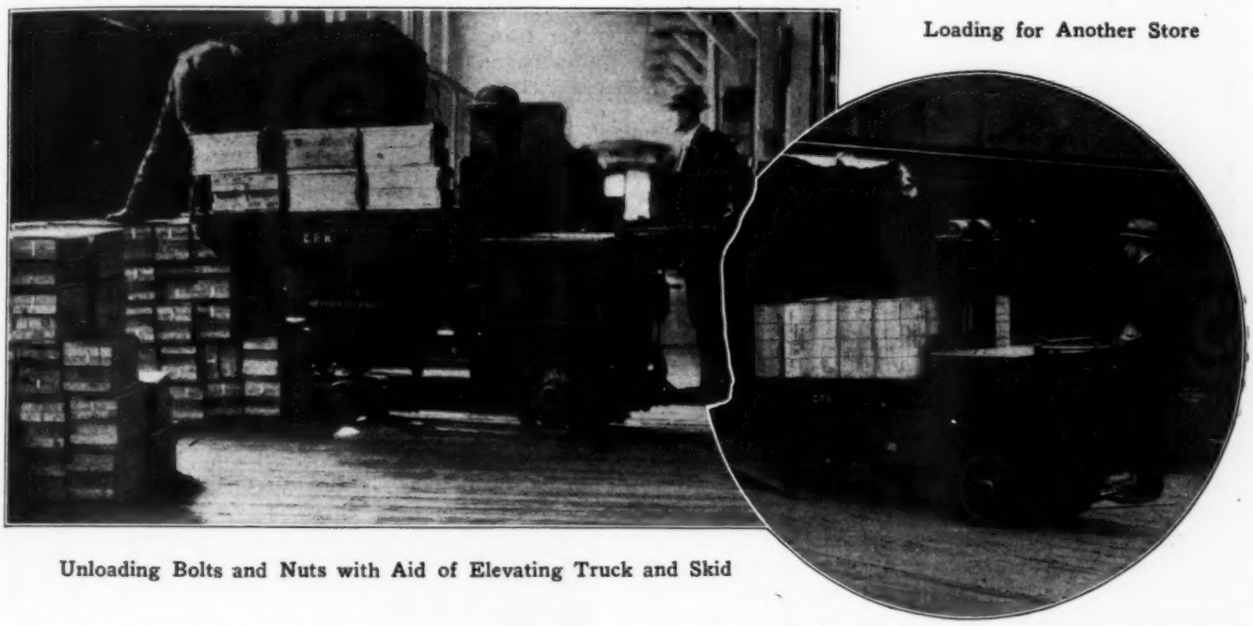
It is interesting to note how small an amount of slow moving or frozen stock this road is said to carry at district and divisional stores. It does not rest with the subordinate stores officers to exercise judgment in determining what stock is surplus or slow moving. Instead, the inflexible rule is enforced that at prescribed intervals a report must be made of every item of stock that has been on hand two months or more, which report is then investigated to determine whether such items should be shipped back to the general store, left where they are or given other disposition. Excluding the general and district stores, the average value of the material in such reports did not exceed $1,000 for any store in 1927.

In connection with the handling of material, the use of hand trucks, wheel barrows, rollers, and similar contrivances is largely a thing of the past. At Angus shop in Montreal, which is the largest shop on the system and the location of the general storehouse, trucks and trailers and also power elevating and crane trucks are now commonplace, while the system of handling ma-

terial for shipment is developed to particularly high degree. Under this system, a crane truck is used for handling heavy materials in and out of cars at the general store and the shipment of much of the material to other stores and from these to the general store is made on portable platforms or in portable containers. The platforms consist of section of plank 4 ft. 2 in. wide and 5 ft. 3 in. long, built on wooden skids 12 in. high so that they can be picked up bodily by an elevating truck and moved to other places in the storehouse or into cars.

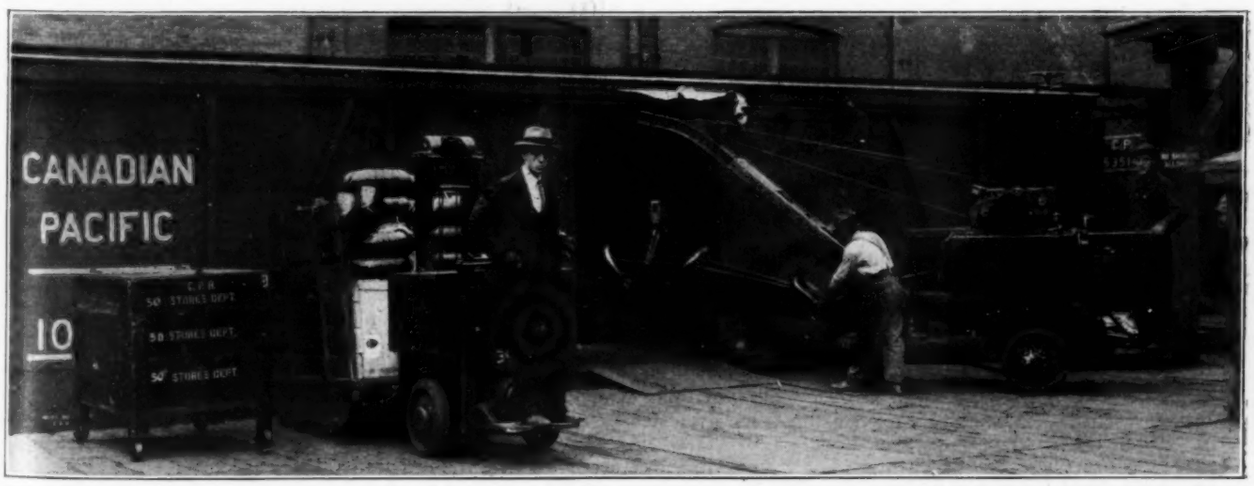
As rapidly as orders are received from the stores, the material is taken from shelves or other places in storage and carried to a shipping floor, unless a car is waiting. The shipping floor is partitioned off to separate materials for each destination as identified by signs on the wall. For instance, there is one section at Angus for material going to Three Rivers, Que.; another for North Bay, Ont.; another for Ottawa, Ont.; another for West Toronto; and another for Glen Yards, etc. The material is carried to these sections on portable platforms moved by lift trucks, or by hand, depending on the kind and quantity of material involved. When necessary, these platforms are fitted with upright panels to form a crate. The typical material involved and the manner of loading are illustrated in one of the photos showing grab irons on one platform; hose, lanterns and track spikes on another platform; boxes of soap, matches and rolls of canvas on another; while a crated platform or tray carries brooms, mops, peavy handles and shovels.

The decision to load a car depends upon the quantity of material on order unless the shipment is urgent. When a car is spotted at the loading platform, these platforms are picked up by a lift truck, carried into the car and left there with the load intact, unless handling conditions at destination make this undesirable. Meanwhile, lumber, large castings and other outside material are also gathered at the platform on trailers or skids and loaded without further switching of the car. When the car reaches its destination, the material already on these portable platforms or skids is picked up by a hand or power elevating truck and handled as it was loaded, while any material piled loosely in the car is removed



Loading for Another Store

Unloading Bolts and Nuts with Aid of Elevating Truck and Skid



Loading Operations at Angus Store—A Container and Portable Platform About to Be Placed in a Car and Shipped with Their Loads to Another Store

by loading it on empty skids or trailers and carted in bulk form to the place of storage if not directly to the point of use.

Wheeled Containers for Breakables

The distinguishing and most interesting feature of the transfer operation between stores lies in the method of shipping those supplies which, because of their small size, delicate construction or value, are particularly subject to loss, breakage or theft. The story is told that it was after seeing this operation, while visiting the Angus shops several years ago, that A. H. Smith, late president of the New York Central, conceived the idea of developing the present container freight car. When

Motorized Handling Dispenses with Much Switching of Cars

material of the kind described is on order, the supplies are not put into bags or barrels indiscriminately, but they are put into special containers or chests, consisting of a wood box or mounted on wheels or casters and fitted with padlocks. The stock clerk readily moves these containers about on the floor of the store room during the process of loading, and when filled and locked, they are pushed directly into the car and shipped to destination, there to be emptied and refilled with material being returned to the general store. Similar containers are also used by district stores to ship material to the smaller stores, where the storekeepers wheel the containers out of the car and move them from bin to bin as the class and quantity of material requires.

The containers were all made at the company's shops but there is no standard construction because, having no precedents, their development has been evolutionary in character. Thus some of the containers consist of square boxes on four casters, while others have a unit-type construction so that additional trays can be attached. The best results have been obtained with a rectangular box which runs on two 12-in. wheels but has a caster under each end of the box for support. The cover is a wire netting on a steel frame. These containers, of which there are 30 in use at Angus alone, are employed for general line shipments and make an average of four trips a month, usually departing with such materials as valves, small tools, electrical accessories, etc., and returning with scrap brass, etc.

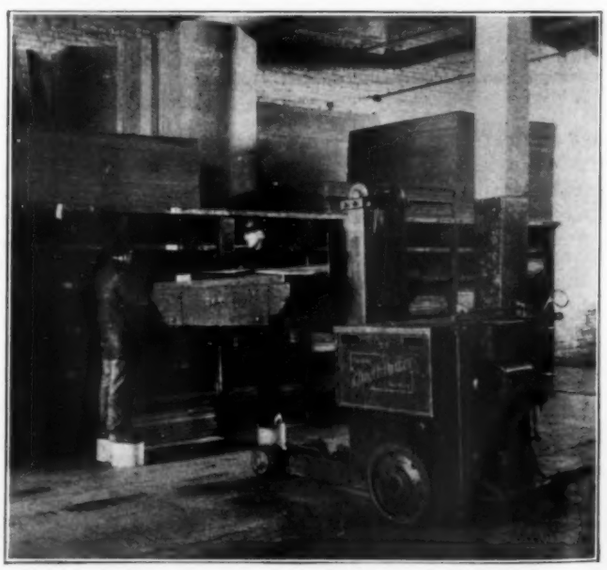
The equipment belonging to the store at Angus alone comprises:

24 Four-compartment containers for handling bolts, rivets and nuts
18 Three-tray wheeled containers
12 Swivel wheel trucks and 24 under construction
75 Low platforms with wheels
2 Stuebling lifting platform trucks
3 Two-ton electric lifting trucks
1 Two-ton Hi-lo lifting truck
1 One and one-half ton electric crane
1 Three-ton motor truck
1 One-ton motor truck
10 Lift truck platforms with removable slatted sides

There is also an extensive amount of concrete highway for trucking operations in the terminal area and a craneway serves the stores platform as well as the shops.

Material handling at this point as well as at the other stores has yet to be fully developed; furthermore, it is impossible to appraise exactly the total value of the present methods over earlier methods, but the economies are not in doubt. During the typical month of August the work at Angus called for 766 cars inbound and 500 cars outbound. Of material delivered to the shop and other using departments in the terminal area, a large proportion is handled with assistance from the elevating crane, trucks and trailers, while approximately 80 per cent of the material shipped per month to small stores and 50 per cent to district stores is handled on containers and platforms. The reduction of labor costs is the most important saving but the quick dispatch in handling and the greater convenience with which material is distributed to the shops and from station to station are also important.

The staff at Angus consists of approximately 200 employees. This includes all clerical help in the general office, all supervision, all storemen and helpers and material handlers for the entire work of the stores department at this important point, including the loading and unloading of cars. From time to time as a special rush of business may demand, extra gangs are employed which increase to some extent the number of employees, but as this is more or less spasmodic only the perma-

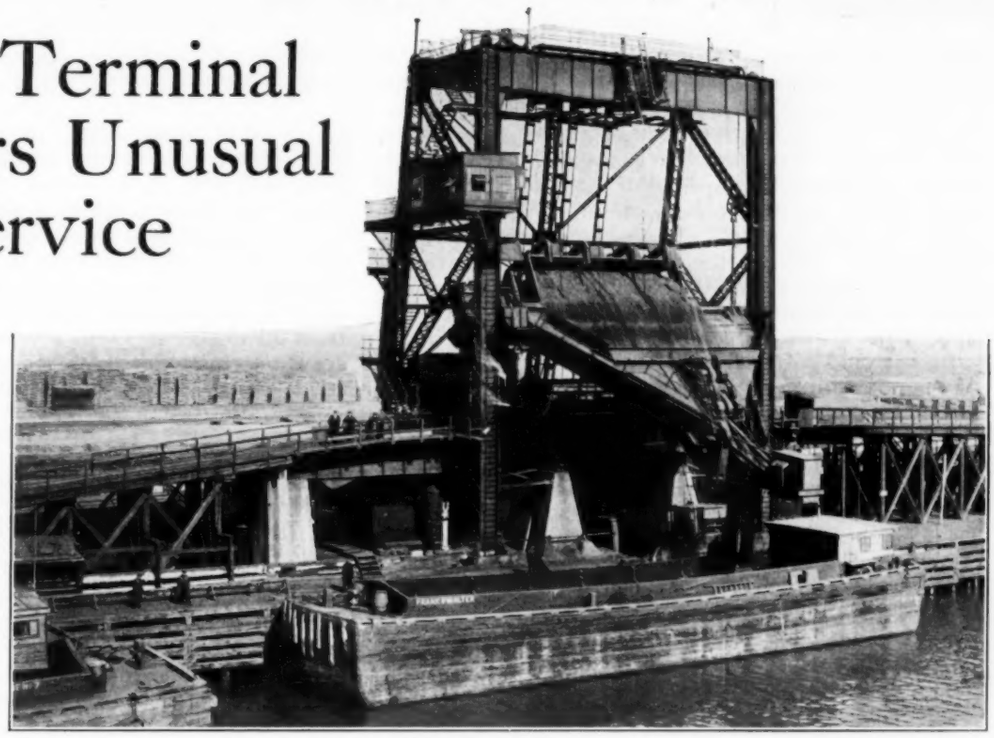


Handling Sheet Iron with Skid and Lift Truck

nent employees have been referred to in the figures quoted. In connection with the attention given to secure prompt shipment of material essential to the maintenance of a low stock balance, a daily report of orders on the various departments of the stores is made, showing the number of orders issued and completed in the various departments from day to day, also the number of shipments made. The records show that only three or four days' orders are on hand unfilled at any time, with the exception of orders on the shops and material waiting on merchants.

Coal Terminal Renders Unusual Service

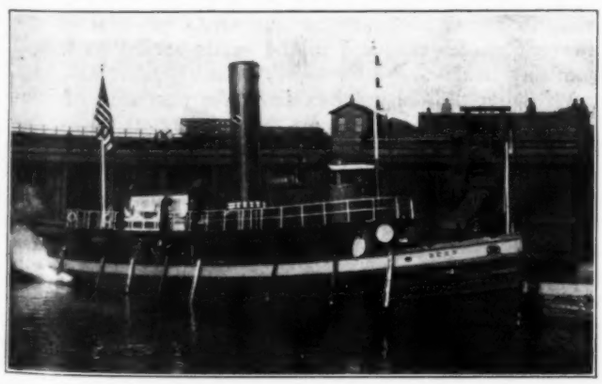
The complex business of supplying New York City with coal is much facilitated by the Reading



The Mechanical Coal Car Unloader at Port Reading Terminal

PRACTICALLY all of the railways entering New York from the west maintain large coal terminals situated either on the Jersey side of the Hudson, or on the Arthur Kill, a waterway with a deep channel which separates Staten Island from the mainland of New Jersey; these coal terminals aiding in the important task of keeping New York and its immediate surroundings supplied with coal. The market for coal and the demand for any one of the many sizes into which it is broken at the mines, are exceedingly variable; so much so, in fact, that it would be utterly impossible for the coal jobbers to operate without the assistance given them by the railways, in the form of their coal terminal facilities.

One example of the service rendered is the coal terminal of the Reading, which is situated at Port Reading,



One of the Reading's Tugs Used in Coal Lighterage Service

N. J., about 17 miles southwest of New York, on the west bank of the Arthur Kill.

Terminal Built to Serve Coal Dealers

This terminal was built principally to handle the traffic of the fuel jobbers of New York and vicinity and over 3,500,000 tons of fuel is transferred from cars to barges annually, or an average of more than 300,000 tons per month. This terminal handled in February, 1926, 386,251 tons, an average of 14,305 tons per working day; and in March of same year 389,663 tons. The traffic handled consists of both anthracite and bituminous coal and coke. Of this traffic, 42 per cent is anthracite coal, 53 per cent bituminous and 5 per cent coke; the actual tonnage in 1926 having been 1,552,955 tons of anthracite, 1,936,004 tons of bituminous and 202,406 tons of coke. The total movement through the Port Reading Terminal has been increasing yearly, having been 3,314,807 tons in 1924, 3,654,717 tons in 1925 and 3,691,365 tons in 1926. A detailed analysis of the 1926 movement will be found in the accompanying table.

Fuel Moved Through Port Reading Terminal During 1926

Month	Anthracite	Bituminous	Coke	Total	Cars
January	24,194	246,849	22,481	293,524	6,269
February	35,166	320,903	30,182	386,251	8,332
March	213,814	162,338	13,511	389,663	8,070
April	168,157	124,638	15,872	308,667	6,457
May	147,942	118,614	14,179	280,735	5,844
June	123,198	134,014	12,514	269,726	5,594
July	107,336	126,011	12,603	245,950	5,212
August	100,410	119,355	10,643	230,408	4,839
September	148,949	114,766	9,535	273,250	5,667
October	175,483	138,995	15,580	330,058	6,804
November	142,651	161,996	16,355	321,002	6,654
December	165,655	167,525	28,951	362,131	7,586
	1,552,955	1,936,004	202,406	3,691,365	77,328

The problem encountered at this terminal was to so arrange the disposal of cars about the yard as to meet fluctuating needs of the coal jobbers in New York. The large number of grades of coal handled, together with the vagaries of the market, rendered this difficult.

The jobbers buy the coal direct from the mines. The bituminous coal comes from Ohio, Pennsylvania, and West Virginia and the anthracite from Pennsylvania. Most of the coals is destined to New York and vicinity, although a considerable movement is also handled through Port Reading for coastwise trade and a small proportion for bunker and export purposes. The coal is sent to Port Reading, consigned to the order of the

jobber who owns it. Usually by the time it arrives there, the jobber has sold it and gives orders to tranship it to barges immediately. In many cases, however, particularly when the market is dull, the coal is held in cars in the storage yard for months at a time; this storage yard having a capacity of 2,800 to 3,000 loaded cars. Frequently the jobbers prefer to rent barges in which to store their coal. Such barges may be rented for from $8 to $15 per day, depending upon their capacity, which ranges from 10 to 25 carloads. This represents a considerable saving to the jobber, of course, since if the coal were permitted to stand in cars in the yard, it would cost him $2 per day per car demurrage. At times, 100 or more of these barges are stored in and around Port Reading docks, each barge containing from 500 to 1,500 tons of coal.

The principal reason for storing so much coal at Port Reading in barges, as well as in cars, is that many grades of coal are handled through the terminal for a large number of jobbers. As a result, each jobbing company of any size must have readily available at Port Reading a sufficient amount of coal to take care of the varying demands of its customers.

The terminal is situated at the eastern end of the Port Reading Railroad, a subsidiary of the Reading. This railway is 21 miles long, single track, with numerous passing sidings, extending between Port Reading, N. J. and Manville, a junction point with the main line of the New York division of the Reading. It is operated for freight only and its principal function is to provide a connection from the main line of the Reading to the coal terminal.

The loaded coal trains inbound average about 50 to 60 cars each, or about 4,400 tons, about five or six of these trains being moved daily, except in the busy season, when the movement increases to ten trains or more per day.

Facilities at Port Reading

The terminal is situated on a tract of land consisting of approximately 280 acres. The amount of traffic handled has been increasing steadily since the first pier was constructed in 1892 and the facilities since that date have kept pace with the increasing business. The first pier, a gravity unloading pier, 58 ft. in width, 900 ft. in length, with a height of 38 ft., was built in 1892 and contained eight loading berths for the delivery from cars to vessels. Another gravity pier, 46 ft. in width, 710 ft. in length, with a height of 22 ft. and berthing space for six boats, was constructed in 1896 and the third gravity pier 58 ft. in width, 900 ft. in length, with a height of 42 ft., and berths for eight boats, was added in 1905. To handle the increasing business, a McMyler mechanical car dumper was constructed in 1917, which has rendered two of the gravity piers unnecessary. These two piers have now been dismantled, leaving them flat deck piers; the mechanical dumper and the one remaining gravity pier now taking care of the business.

Among the other facilities is a coal thawing shed which is used to facilitate unloading in cold weather. The mechanical department facilities include an engine terminal, where minor repairs to yard and road locomotives are made and a well-equipped car shop, where all classes of repairs are made. A boiler plant, consisting of eight boilers, six of 200 h.p. each and two stoker-fired of 350 h.p. each, is operated in connection with these facilities and also to serve the thawing shed during the winter months. A well-equipped storehouse and creosoting plant are also maintained at Port Reading.

There are about 60 miles of track in the terminal area, with 276 switches. The lay-out consists of several groups of tracks, designated as a north yard, a center yard and a south yard. In addition, there are two groups of tracks known as "pitt" tracks. The north yard, which is used as a receiving yard, contains 23 tracks; the south yard has 5 receiving tracks, 7 "alphabet" or classification tracks and 7 storage tracks. The center and lower "pitt" yards contain 35 storage and classification tracks, while the upper "pitt" yard contains 17 storage tracks; all of these with capacity of from 20 to 50 cars each. Adjacent to the center yard are three tracks for the disposal of empty cars as they are returned from the mechanical dumper.

Yard Operations

Under normal operation, the yard force works in two eight-hour shifts. The assignment of crews and power was worked out with due consideration to the existing facilities. There is relatively little spare room in the yard when business is heavy or when the exigencies of the market cause a number of cars to be stored, which is of not infrequent occurrence. It has been necessary, to secure efficient operation, for the supervisory officers to take advantage of every expedient in the way of moving these cars about the yard, so there will be a minimum of interference. In this way they receive material aid from the crews themselves, which have been working in this terminal as a unit, with but few changes in personnel, for years. When the mechanical dumper was installed and placed in operation in 1917, it was necessary, of course, to make many changes in operation, based on a preliminary survey of the situation. Since that time, improvements in operation have been effected from time to time through experience, many of these changes having been suggested by the crews themselves.

The peculiarities of the market made it necessary to have great flexibility in the assignment of classification tracks.

The demand for the various grades of coal fluctuates materially with the seasons and with the current market prices. It was impossible, therefore, to make a definite assignment of one track or group of tracks, for example, to "rice" coal or "pea" coal or to any of the numerous other grades, either of anthracite or bituminous, because the quantities of coal of the different grades on hand in the yards varied so widely from day to day.

A further difficulty arises from the necessity of handling and rehandling the cars of stored coal. In order that this may be reduced to the minimum, it has been necessary for the supervisory officers at Port Reading to become experts in forecasting the coal business. They watch the market very carefully to determine which cars will be hurried through the terminal and which will be stored. In addition, they keep in close touch with all the jobbers using the terminal, and, as far as possible, obtain from them a line-up of what disposition they will require on their cars. In this manner, they are able to obtain a fairly accurate advance line-up.

This is valuable from an operating standpoint, in that it permits the classification of the inbound coal on a somewhat reliable basis. Cars that are to be transshipped promptly are classified into the proper grades and held in readiness for immediate movement over the dumper, while the cars that are likely to be held in storage for some time are classified on the storage tracks, both as to the grade of coal with which they are loaded and as to the time when they are likely to

require trans-shipment. The storage tracks are so located as to offer no interference to the regular movements in the yard.

This anticipation of the jobbers' needs cannot be made with absolute accuracy, in view of the unsettled conditions in the coal trade, but it is made sufficiently comprehensive to avoid a great deal of unnecessary switching. As a matter of fact, if this system were not in effect, it would hardly be worth while to classify the cars at all, because the amount of switching necessary after classification would be practically as great as though the cars had not been classified in the first place.

As the coal arrives, clerks in the freight office prepare lists of car numbers and grades and the jobbers are notified daily, or oftener if desired, of all car arrivals for their account. The cars are then flat-switched into the classification tracks and a complete list of all cars and their locations is sent to the yard office. As the orders come in for trans-shipment, a yard clerk prepares switching lists for the yard foremen, giving the car numbers and their location. These lists also specify whether the cars are to be dumped by the mechanical dumper or from the gravity pier.

Boat Transfer Operations

In cold weather the cars are then shifted to the thawing shed. If the weather is sufficiently warm, so that thawing is unnecessary, they are shifted to the dumper through a track which leads around the thawing shed, or through the stalls of the thawing shed which are left open. This shed is built over four of the lead tracks between the storage yards and the dumper. It is 440 ft. long and 70 ft. wide and its four stalls have capacities of 11 cars each. The approach to the shed is on a 2 per cent grade, which permits 11 cars to be pushed into the shed, on each track without difficulty, by the switching power in use at the terminal.

The coal is thawed by forced air, heated to 200 degrees F., which heated air is brought into contact with the bottoms and the hoppers of the cars. The heating apparatus consists of steam engines, fans and steam coils. An interesting feature of the plant is that the same air, already heated, is used over and over again, being drawn from the top of the stalls through steam coils and forced through ducts which have outlets between the rails. This plant is operated during the winter months on an average of three to four months each year.

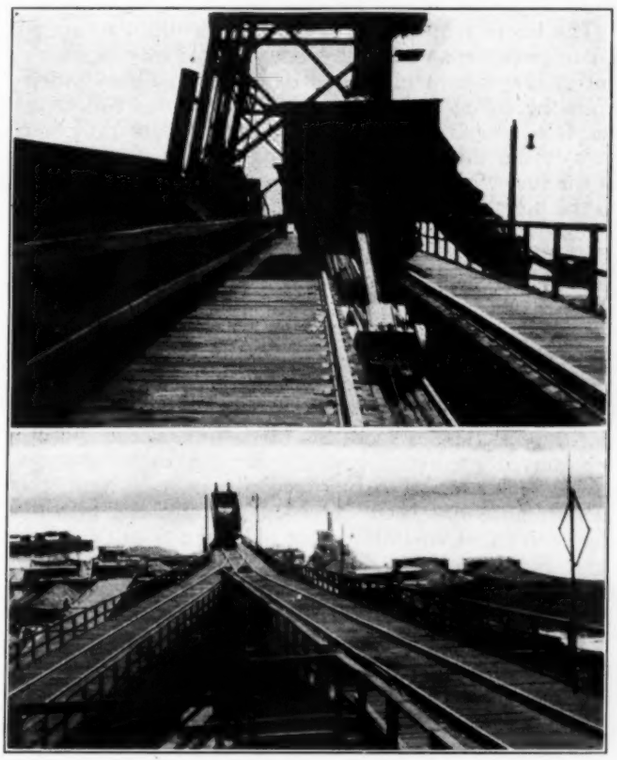
From the thawing shed, the cars are run down a 1.25 per cent grade, by gravity to a haulage pit. From this point, they are pulled up an 11 per cent grade to the cradle of the dumper by a steam-operated car haulage machine. The actual propelling device is a beam or barney mounted on a four-wheel dolly truck, the beam being mounted at such an angle that it comes in contact with the rear coupler of the car. The truck or barney and the car it is pushing are hauled up the grade by a cable. The car is clamped in place at the cradle, elevated and turned over, the coal running through a pan conveyor and the movable chute into the barges. The cradle and the empty car are then returned to their former position.

A total of 336 cars has been unloaded by this dumper in 10 hours, or an average of 1 min. 47 sec. per car. A force of several hundred men was employed to handle the maximum of 600,000 tons per month over the three gravity piers comprising the former layout, as compared with 12 men required to handle the same tonnage over the mechanical dumper.

The gravity pier is operated as a supplementary facility to the mechanical dumper. It is used principally during rush seasons, for loading small barges or grades of coal that would tend to slow up the operation of the mechanical dumper. The cars are spotted on this pier over the eight loading berths and the coal then unloaded through the drop bottoms into chutes which conduct it into the barges.

The Disposition of Empties

After the dumping operation is completed by the mechanical unloader, the loaded car coming up the incline to the cradle pushes the empty car off the cradle and down a 4 per cent grade. At the end of the track is an



Above: A Dolly Truck Pushes Loaded Cars to the Cradle; Below: The Switchback for Shunting Empties Back to the Yard

elevated switchback, equipped with a spring switch, which shunts the car back down a 1 per cent grade into the empty car tracks. Each car is accompanied by a rider from the cradle to the empty car tracks.

The operation on the gravity pier is similar, except that the cars are on a grade while unloading, so that it is only necessary to release the brakes to start them down the incline to the switchback.

After the cars reach the empty car tracks, they are classified in accordance with the owning road and made up into trains which are hauled to the departure yard for return movement by the road crews.

The Lighterage System

The barges used for lightering the coal to destination are owned by shipping or transportation companies operating in New York harbor. An electric boat hauling machine moves the loaded barges away from the dumper and shoves the empties into place. It also warps the barges up and down the pier while they are being loaded, so as to bring the proper hatch under the chute. The machine consists of a drum under the car dumper,

with sheaves anchored to the pier in both directions from the drum over which the cables are operated.

The tugs which move the barges engaged in lightering the coal are owned by the Reading. There are four of these, two being 104 ft. 6 in. long, with a beam of 24 ft. 6 in., a depth of 11 ft. 8 in. and 500 h.p. The other two are 88 ft. 2 in. long, having a 19 ft. beam and a depth of 10 ft. 2 in. One of these has a capacity of 350 h.p., while the other has 325 h.p. The average tow that these tugs handle is 20 barges. The average tonnage per barge is 600 to 800 tons; the tonnage per tow, therefore, aggregating 12,000 to 16,000 tons. During the busy season, these tugs have moved as many as 40 to 50 barges in one flotilla.

The loading of the barges is done in the daytime as far as possible, so that the loaded barges may be moved out at low tide at night and delivered to their destinations the following morning. The tugs also collect the empty barges from the various piers in New York harbor, during the day and assemble them at a stake boat in the lower harbor. From this point, they are brought to the piers at night for the following day's loading.

Fast Run by Big Four Special

ON January 25, 1928, a special train on the Big Four consisting of a locomotive, one coach and two official cars made what is believed to be the second fastest long distance run on record when it ran the 536.1 miles from St. Louis to Cleveland in 509 minutes at an average speed for the entire distance of 63.2 m.p.h. Existing records indicate that this performance has been exceeded on only one previous occasion when, in 1905 on the old Lake Shore & Michigan Southern from Buffalo to Chicago, a special train made a record of an average speed of 69.69 m.p.h.

There was no advance preparation for this trip and it is reported that the operating department was not certain until less than two hours before the start was actually made that the train would be run. The outstanding features of the trip were the uniform but not excessive speed maintained throughout the entire distance and the efficient functioning of departments that were called upon without advance notice. No attempt was made to break any speed records, each engine crew being instructed to stay within the speed limit of 75 m.p.h.

The special left St. Louis 2 hr. 26 min. after the departure of the Southwestern Limited and approached the block occupied by that train about 20 miles west of Cleveland. In the entire run there was a total delay of 14 min. occasioned by taking a siding at Dudley, Ill., to meet train No. 11, the westbound Southwestern Limited; an additional stop at Muncie, Ind., to take water on account of getting a poor tank of water out of Indianapolis, and two engine changes, one at Indianapolis and the other at Bellefontaine, O. Locomotives were changed in order to avoid a possible delay for coal or water. The locomotives used on this run were of the Pacific type, built in 1909 having 22-in. by 26-in. cylinders, 75-in. drivers and a tractive force of 28,600 lb. The details of the entire movement are given in the table.

	Station	Time	Miles from St. Louis	Time from St. Louis min.	Average Speed m.p.h.	Speed Between Stations m.p.h.
Dep.	St. Louis	11:26 a.m. (C.T.)				
By	Granite City	11:45	8.9	19	28.1	
	Hillsboro	12:24 p.m.	57.8	58	59.8	77
	Pana	12:45	85.1	79	64.6	78
Arr.	Mattoon	1:20	123.9	114	65.2	66.5
Dep.	Mattoon	1:23				
By	Paris	2:04	161.4	158	61.3	55
	Terre Haute	2:21	180.4	175	61.8	67
	Greencastle	2:49	213.0	203	62.9	70
	Mt. Jackson	3:18	249.6	232	64.5	75.7
Arr.	Indianapolis	3:23	252.1	237	63.8	
Dep.	Indianapolis	3:25				
By	Anderson	4:03	288.5	277	62.5	57.5
	Muncie	4:23	306.3	297	61.9	63.0
	Union City	4:51	337.3	325	62.3	66.5
	Sidney	5:19	372.4	353	63.3	75.3
Arr.	Bellefontaine	5:40	395.3	374	63.4	65.4
Dep.	Bellefontaine	6:43 (E.T.)				
By	Marion	7:18	434.6	412	63.3	67.5
	Galion	7:38	456.3	432	63.4	65.0
	Shelby	7:51	468.9	445	63.2	58.2
	Wellington	8:16	499.6	470	63.8	73.7
	Berea	8:37	523.6	491	64.0	68.5
Arr.	Cleveland	8:55	536.1	509	63.2	

Delays:

3 minutes Mattoon, water
3 minutes Dudley, meet No. 11
2 minutes Indianapolis, change engines
3 minutes Muncie, water
3 minutes Bellefontaine, change engines

14 minutes

Delayed Berea to Cleveland, block of No. 12, the Southwestern Limited.
From Granite City to Berea—514.5 mi. in 472 min., including delays.
Average speed from Granite City to Berea—65.5 miles an hour.

Train consisted of—
Big Four coach No. 909
Big Four official car No. 403
New York Central official car No. 2
Hauled by Big Four "K" type engines 6422, 6436, 6440

Locomotive Which Pulled the Special from St. Louis to Indianapolis—The Other Locomotives Used on the Run Were of the Same Class

Will Moffat's Dream Be Realized?

Completion of Colorado tunnel raises question as to the use to be made of it

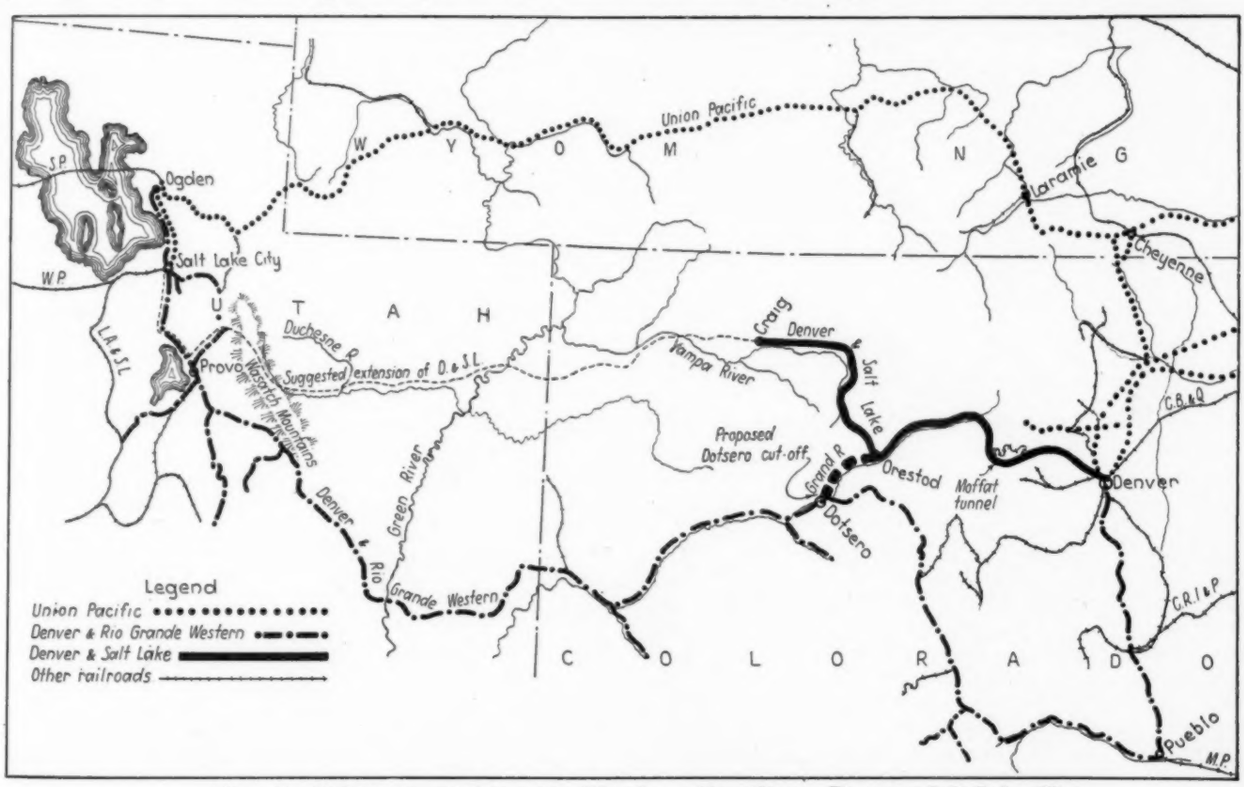
THE inauguration of railway service via the six-mile Moffat tunnel through the continental divide on the Denver & Salt Lake, 60 miles west of Denver, Colo., which is expected to take place early in March, will mark the fulfillment of a monumental project carried out at a cost of $18,000,000 in the face of severe obstacles. But what has not yet been determined is the use to be made of this tunnel that will justify this enormous expenditure. What change in railroad geography, if any, is to be brought about as a consequence of this great undertaking, financed by taxes paid by property holders in the specially created "Tunnel Improvement District" embracing the City of Denver and an area encompassing a large part of the northwestern section of the state of Colorado?

The tunnel has been leased for 50 years by the Denver & Salt Lake, the only railroad which now has access to it, for, as built, the tunnel lies substantially in the location established by the engineers who laid out the Moffat line more than a quarter of a century ago. In fact, its construction was and always has been considered an essential element in the successful operation of that railroad because of the difficulties attending the movement of its trains over the so-called temporary line which crosses Rollins pass at an elevation of 11,660 ft. above sea level, involving grades of four per cent for a total distance of 27 miles, and imposing the severest of winter conditions for nine months of the year.

With the completion of the tunnel these difficulties have been largely eliminated. However, this advantage is offset in part by the fact that the railroad must pay rent and other expenses incident to its use of the tunnel which range from $329,660 to $536,740 annually for the first 36 years.

Tunnel Not a Mere Local Utility

But those responsible for the construction of the Moffat tunnel have never looked upon it as a mere utility for the Denver & Salt Lake railroad, any more than David H. Moffat deemed that his work was complete when the line had been completed to Craig, Colo., 254 miles from Denver. The motive was and always has been that of putting Denver on a transcontinental line.



How the Moffat Tunnel Opens the Way for a New Short Route to Salt Lake City

Moffat and his successors in the control of this railroad persisted in pointing to the feasibility of a line extending west from Craig, down the valley of the Yampa river to its confluence with the Green river, thence up the valley of the Duchesne river to a crossing of the Wasatch range above Provo, Utah, and thence into Salt Lake City, this location giving a rail distance between the two cities of 578 miles as compared with 614 miles via the Union Pacific and 745 miles over the circuitous route of the Denver & Rio Grande Western.

But this project has apparently passed entirely out of the picture, and instead attention is centered on what is known as the Dotsero cut-off which would connect Dotsero, 342 miles from Denver, on the Denver & Rio Grande Western, with Orestod, which is only 128 miles from Denver on the Denver & Salt Lake. As these two points are both in the canyon of the Grande river

and are but 41 miles apart, the route via the Denver & Salt Lake to Orestod over the proposed cut-off to Dotsero would total only 169 miles or 173 miles shorter than the distance from Denver to Dotsero via the Rio Grande. This means that the through route from Denver via the Denver & Salt Lake, the cut-off and the Denver & Rio Grande Western to Salt Lake City would total 572 miles instead of 745 miles over the existing line. It would also be shorter by 54 miles than the distance from Denver to Salt Lake City via the Union Pacific.

Surveys of the Dotsero cut-off, made at the instance of the Denver & Salt Lake, show that the route is an entirely practicable one. It involves a descent from elevation 6700 at Orestod, to elevation 6167 at Dotsero in a distance of 41 miles and could readily be built with grades less than those of the lines which it would connect.

When and By Whom Will It Be Built?

When and by whom this connection is to be built, if it is built at all, depends entirely on railroad strategy. For it to be built by the Denver & Salt Lake, assuming that that property could obtain the necessary capital, is not within reason because it is obvious that the cost of the line could be justified only through the development of a volume of traffic which the Denver & Salt Lake could scarcely be assumed to command in the status of an independent bridge line.

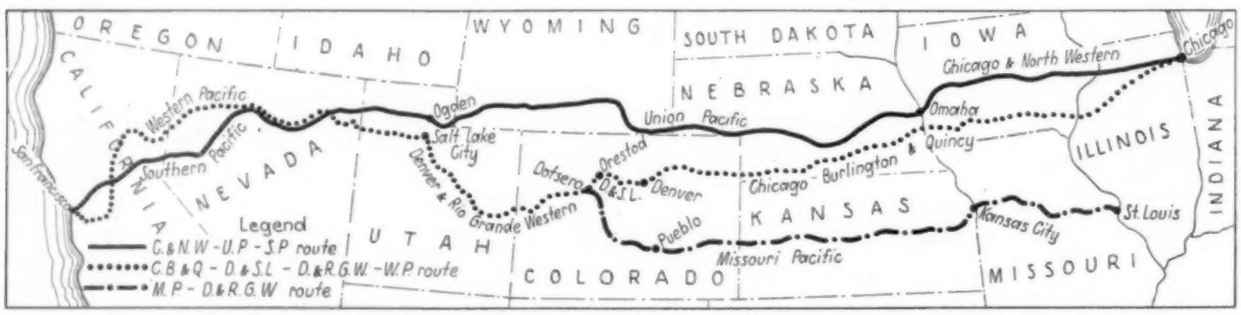
Absence of any manifestation of interest in this project on the part of the Denver & Rio Grande Western can be explained in part by the fact that the use of the proposed route would entail a division of the haul between Denver and Salt Lake City of traffic which is now carried exclusively over its own rails. However, the improvement in the route would no doubt serve to attract considerable traffic that is now routed over other lines and would result in appreciable reductions in the transportation expense because of more favorable grades and a much shorter line. But still more significant in this regard is the status of the Denver & Rio Grande Western as the creature of its joint owners, the Western Pacific and the Missouri Pacific. While the former would have a definite interest in the development of a shorter and better route from Salt Lake City to Denver as a means of placing it in a better position to compete with the Union Pacific-Southern Pacific combination for traffic between Chicago or Omaha and the Coast, the Missouri Pacific obviously has no interest in any project which would tend to divert any Denver and Rio Grande Western traffic from its own point of interchange at Pueblo, Colo.

Recently, speculation has been rife concerning the possibility of interest in this development from another source. Arthur Curtiss James, chairman of the board of the Western Pacific and the owner of a controlling interest in that property, is also a director of the Great Northern and the Chicago, Burlington & Quincy and is a large stock holder in both the Great Northern and the Northern Pacific. This has led to speculation as to a community of interest between the Burlington and the Western Pacific which could lead eventually to the development of a new transcontinental route. If the Burlington should obtain control of the Denver & Salt Lake and build the Dotsero cut-off, the Denver & Rio Grande Western could be made to serve as an effective bridge line for traffic originating on the Burlington for destinations on the Western Pacific and vice versa, regardless of the exact status of the Denver & Rio Grande Western insofar as ownership is concerned.

A Comparison of the Routes

This oft-suggested solution raises a question as to the character of the route to be developed in this way and how it would compare with the well established "Overland" route between Chicago and San Francisco made up of the Chicago & North Western, the Union Pacific and the Southern Pacific. The distance from Chicago to Salt Lake City via the Burlington and the suggested new route would be 1,589 miles or 74 miles more than the rail haul over the North Western and the Union Pacific. However, owing to the greater length of the Western Pacific as compared with the Southern Pacific the total distance from Chicago to San Francisco via the suggested transcontinental route would be 2,517 miles which, while 173 miles shorter than over the present Burlington—Denver & Rio Grande Western—Western Pacific combination, would still be 259 miles longer than the North Western—Union Pacific—Southern Pacific combination.

This disparity in distances would be offset in part by the more favorable grades of the Western Pacific as compared with the Southern Pacific. The former has a ruling grade of 1 per cent while the latter, which has grades of a comparable nature on most of its mileage, is confronted with grades of slightly more than 2 per cent in its crossing over the Sierra Nevada range. However, with respect to the crossing of the Rocky Mountain system the advantage would remain with the Union Pacific which possesses a ruling grade of 0.82 per cent except for a climb of 1.14 per cent opposed to eastbound trains between Ogden and Wasatch, and a 1.65 per cent grade against westbound trains up Sherman Hill. In contrast with this, the Denver & Rio Grande Western—Denver & Salt Lake route would have no engine district with less than a 1 per cent ruling grade in at least one direction, with grades over the Wasatch range of 2 per cent and 2.4 per cent opposing eastbound and westbound trains respectively, and a grade of 2 per cent for 40 miles opposing westbound trains from Denver to the Moffat tunnel.



How a New Trans-Continental Route Via the Moffat Tunnel Would Compare with Existing Routes

Advantages of the New Route

However, in spite of these disadvantages of the proposed new route as compared with the well established route over the Union Pacific and the Southern Pacific, the fact remains that the route utilizing the Moffat tunnel would be a more formidable competitor of the primary route than the one with which it now contends. Not only would the use of the Denver & Salt Lake and the Dotsero cut-off shorten the distance from Denver to Dotsero almost exactly one-half, by replacing 342 miles of line with 169 miles, but the 342 miles of the Denver & Rio Grande line thus eliminated embraces the most unfavorable portion of that line between Denver and Salt Lake City with respect to both grades and curvature. It would replace a line having 6641 ft. of rise and fall in the crossing of Tennessee pass at Elevation 10239 and the Platt River water shed at Elevation 7237, with a line embracing only 3072 ft. of rise and fall in the crossing of the summit at the Moffat tunnel at Elevation 9239. Over the old route there are ruling grades of 1.42 per cent opposing westbound trains for a distance of approximately 150 miles and grades of 1.33 to 1.42 per cent opposing eastbound trains for a distance of 50 miles with a 3 per cent grade for 20 miles. On the suggested route, between Denver and Dotsero there would be about 113 miles of ascent against eastbound trains very little of which would exceed 1 per cent, and 40 miles of continuous 2 per cent grade opposing westbound trains.

On the other side of the picture is the fact that the Denver and Rio Grande Western is now a well developed line. Marked improvements have been made in its alinement and in the general physical condition of its track and roadbed. Any plans for the adequate development of the new route therefore imply not only the cost of building the Dotsero cut-off, but also of improvements in the Denver & Salt Lake road.

It is, of course, impossible, in a brief outline of this kind, to present all the facts that have a bearing on the relative merits of any two routes. Other physical feaures such as the condition of the tracks and roadbed, the character and condition of terminals, bridges, water supply, etc., must also be given due weight in determining the advantage of one line as compared with another. It is clear, however, that the completion of the Moffat tunnel offers marked opportunities for further railway development.

FIRE PREVENTION RULES. The prevention of fires on railroads calls for good sense, interest, cooperation, education, willingness to learn, readiness to make suggestions and ability to see what fire prevention means and the way in which it relates to economic operation. This proposition, elaborated into a four-page circular, has been issued by the Chamber of Commerce of the United States (Washington) with the purpose of promoting the activities and the efficiency of fire prevention committees in all lines of business and industry. The circular has been prepared by the Railway Fire Protection Association, and its publication by the Chamber of Commerce is desired to be taken as a compliment to the railroad men, implying that their methods of promoting efficiency in fire prevention are among the best to be found. Among the striking paragraphs in the circular is that referring to watchmen, and the functions of watchmen at night and on holidays. "An unchecked watchman is a negligible quantity." Dependence on superannuated men to perform watchman service effectively is a dangerous course. The circular, for the greater part, is complimentary to the results by the railroad fire protection service; but as regards watchmen, it says that "much improvement may yet be made."

Hearings on Parker Bill Concluded

WASHINGTON, D. C.

HEARINGS before the House committee on interstate commerce on the Parker railway consolidation bill were concluded on February 10 and Chairman Parker announced that consideration of the various suggested amendments to the bill would be considered in executive session beginning on February 14 with a view to an early report.

The final witness was L. S. Cass, vice-president of the American Short Line Railroad Association, who urged that the committee retain in the bill the provision for a thorough study of the short line situation by the Interstate Commerce Commission. He said the short lines have lived since 1920 in the hope of a plan that would combine the weak lines with the strong ones, but that their hopes have not yet been realized. Abandonment of many short lines, he said, would have an appalling effect on the communities dependent upon them.

Mr. Cass' testimony followed that of Ben B. Cain, general counsel of the short line association, who urged the passage of legislation that would provide machinery by which the Interstate Commerce Commission may indirectly provide for the inclusion of short and weak railroads in stronger systems. So that the commission may have adequate knowledge of what roads ought to be included, Mr. Cain said he thought it important that the bill include the provision directing the commisson to make an extensive study of the short and weak lines. Unless it does have such a study available, he said, so as to enable it to determine the effect of a proposed unification on railroads not before it, he did not see how it could deal intelligently with an application before it. It is true, he said, as suggested by former Commissioner Hall, that the commission has been studying the short lines for many years, and he would be willing to have the matter left to the commission's discretion so that if it has the knowledge necessary to deal with a particular situation it need not make an additional study or postpone its order in any way. He said the commisson took very little evidence relating to short lines at the hearing on the tentative consolidation plan.

In conclusion, Mr. Cain said he would like to throw out the suggestion as to whether the commission should not be given power to issue a supplemental order in a unification case, after having passed on it, in order to include some lines brought to its attention in a later proceeding or otherwise. Under the present law, the commission holds the record open so that it may issue supplemental orders and it may develop subsequently that some road not at first included should be included, but the Parker bill provides only that carriers directly concerned in the order may ask for supplemental orders.

Mr. Thom said that if the committee was to give serious consideration to such a suggestion he would like to be heard on it. After consent has been obtained for a unification, he said, and the commission has passed on it, if the commission could then come along and say that another road should be included, the effect would be to add to the situation a substantial difficulty which might have precluded the consent of the parties in the first place. It would be destructive of the whole plan, he argued, because an order would always be subject to change and the existence of such a possibility would be a great obstacle. "There ought to be some limitation on the power of the commission to deal with a status carried out under its orders," he said.

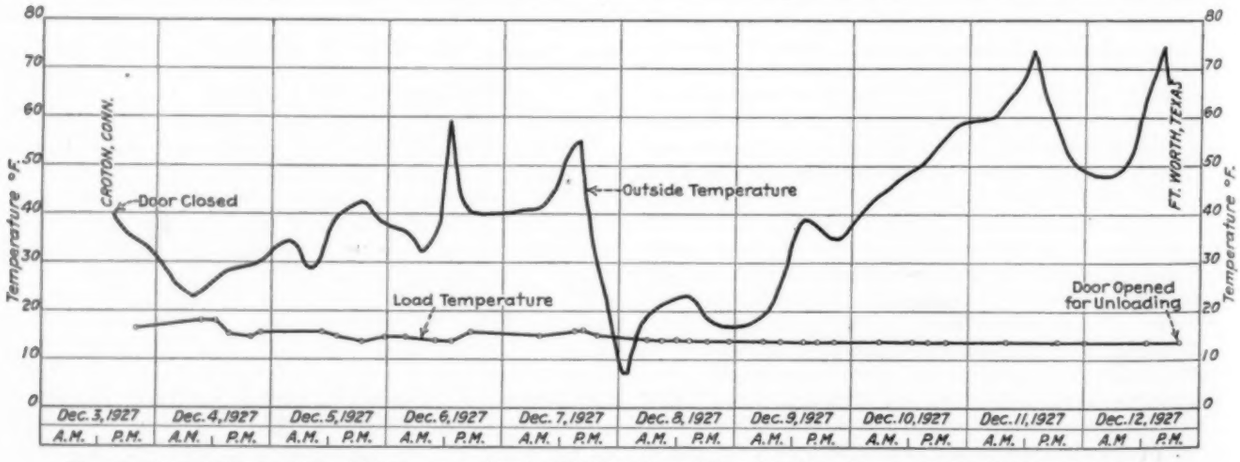
Experimental Iceless Refrigerator Car Which is Being Tested in Actual Service by the Safety Car Heating & Lighting Company.

An Iceless Refrigerator Car

Used for transporting fish from New London, Conn., to Fort Worth, Tex., maintaining uniform load temperature of about 15 deg. F.

THE Safety Car Heating & Lighting Company, New York, has had in service for a number of months an iceless refrigerator car, the principle of the operation of which is based on certain physical properties of a substance known as silica gel. No source of mechanical power is required, the operation being effected by heat from a stored gas supply.

Several long haul runs have been made with the first car equipped with this system and the results have been uniformly successful. A variety of commodities have been carried, including frozen fish, oranges, and cantaloup. A test run was made last December from New London, Conn., to Fort Worth, Tex., with 19,865 lb. of frozen haddock fillet packed in cartons and wooden boxes, making a gross weight of 24,664 lb. Temperature observations were taken throughout the run by means of several thermo-couples placed at various points in the car, the averages of which are shown in one of the illustrations. At no time did the temperature at any point in the car exceed a temperature at which the thermostat was set. The car was precooled to two degrees above zero before loading and the temperature of the fillet when loaded averaged 18 deg. F. The fillet was unloaded at a



Temperature Observations Taken on a Load of Fish from New London, Conn., to Forth Worth, Texas

temperature of 14 deg., having been in the car 11 days. It was not necessary to refuel during the run and only half of the initial charge was consumed.

Silica Gel—Its Composition and Properties

Silica gel is a hard, glassy material with the appearance of a clear quartz sand, of the chemical formula SiO_2 and is chemically inert toward practically all substances. During the manufacture of silica gel, the steps of the process are carefully controlled so that the physical structure of the finished silica gel is of an extremely porous character. The pores are so minute they cannot be detected under a microscope, but a study of its action indicates that it must possess such a structure. It has been determined that the voids constitute 41 per cent of its volume.

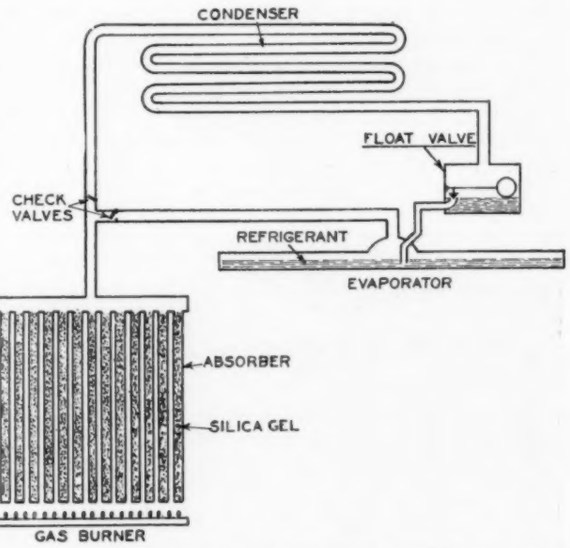
The presence of these minute voids gives silica gel the ability to absorb relatively large quantities of vapors. As an example, a quantity of silica gel placed above water in a closed vessel will absorb, or take up, water vapor to the extent of 25 per cent of its own weight. If it is then removed from the vessel and activated by heating, the water vapor will be driven out and the silica gel rendered capable of absorbing more vapor. This action is purely physical, and the cycle may be repeated indefinitely, with no alteration in the structure of the silica gel, or decrease in its absorptive power. It is this peculiar property of silica gel which forms the basis of the operation of this iceless refrigerator car.

Operation of the Refrigerating Apparatus

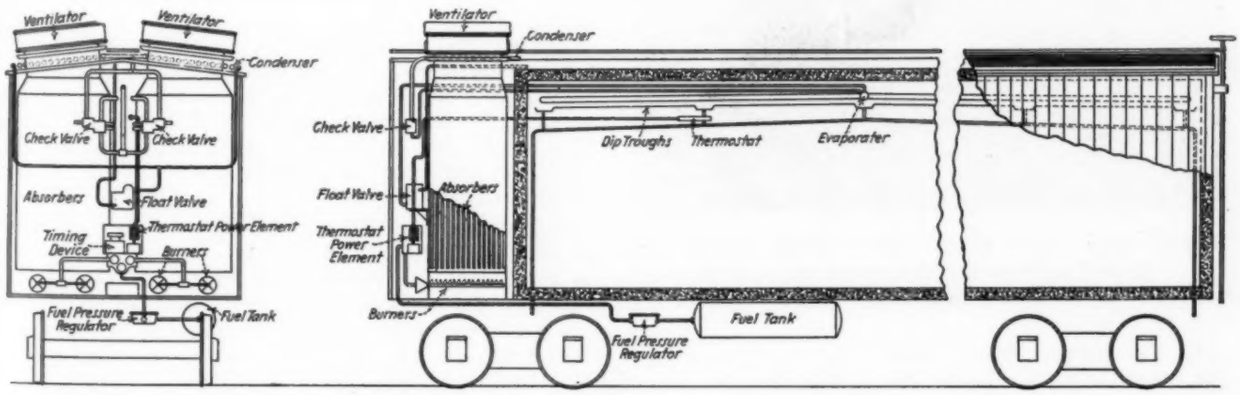
The apparatus consists essentially of three main parts; namely, the absorber (containing the silica gel), evaporator and condenser. It may be briefly described as being identical to a compression type machine with a compressor replaced by the absorber; the absorption of the refrigerant vapor by the silica gel corresponding to the suction stroke of the compressor and the activation of the silica gel to the discharge stroke. No power need be generated for the silica gel system, the necessary heat being applied directly to the silica gel.

The operating cycle of the apparatus may best be explained by reference to one of the drawings in which is shown diagramatically the absorber, condenser and evaporator. Assuming that the silica gel in the absorber has been activated, it will absorb vapor from the refrigerant in the evaporator, causing a lowering of the temperature of the latter by the evaporation of the refrigerant. Evaporation of any refrigerant in the condenser is prevented by the float valve and the check valve, shown in the vertical pipe.

When the silica gel has become saturated with vapor, it is heated by means of a gas burner and the refrigerant vapor is driven out of the silica gel, passing to the condenser where it is liquified and returned to the evaporator by the float valve. The horizontal check prevents the entrance of vapor to the evaporator. When activation of the silica gel has been completed, the source of heat is removed and, as soon as it has cooled sufficiently, the absorption phase begins automatically. In actual operation, the heating period is much shorter than the absorption period, and by dividing the absorber into two sections and heating these sections alternately, continuous refrigeration is produced. As actually constructed, the silica gel is contained in many tubes of small diameter to effect a rapid heating and cooling.



Diagramatic Sketch Showing the Arrangement of the Silica Gel System



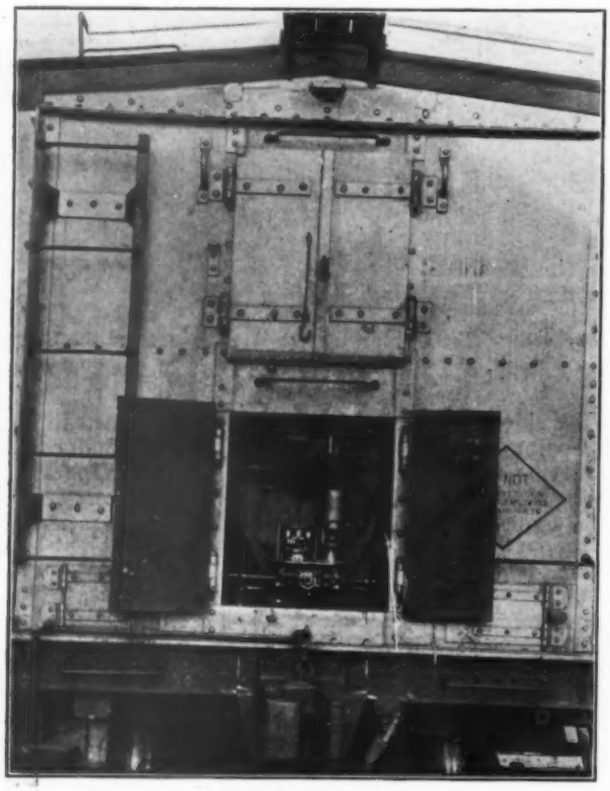
The Silica Gel System Applied to a Refrigerator Car

The arrangement of the apparatus as applied to the refrigerator car is shown in one of the drawings. The evaporator, consisting of a series of parallel pipes running longitudinally of the car and connected to a transverse header and containing liquid sulphur dioxide, is suspended close to the ceiling of the car. Be-

low these pipes are suspended a series of small troughs arranged to catch and carry off condensation from the pipes, thus keeping the lading dry.

The condenser is of the air cooled type and consists of a series of pipes mounted on the roof of the car and protected from the direct rays of the sun by a covering, which at the same time permits free circulation of air over the condenser.

The two sections of the absorber are placed at one end of the car and outside the insulated car body. The groups of vertical tubes containing the silica gel are placed in insulated fireproof casings provided at the top with ventilators to give a rapid upward movement of air, or products of combustion, from the gas burn-



Bottom Ends Doors to the Refrigerating Compartment Opened to Show the Thermostat and Control Equipment

ers. The burners which furnish the heat for activating the silica gel are placed below the tubes. The float valve is mounted in front of the absorber and the two manifolds containing the check valves are just above the float valve. The fuel used for heating is carried in tanks suspended under the car body, and is fed to the burners at reduced pressure through a pressure regulator.

This arrrangement is based on 40 years experience with the Pintsch compressed gas system for lighting passenger coaches.

The operation of the system is effected entirely by lighting and extinguishing the burners alternately and at the proper intervals. This is accomplished by a device operated by pressure obtained from the fuel, and is indicated in the drawing showing the arrangement of the apparatus, as mounted below the float valve. This device operates at a slow but definite speed and admits gas to the burners for fixed periods and at definite intervals. The gas is ignited at the burners from a small pilot flame which burns continuously.

The period of heating is of about 30 min. duration and the interval between successive heating periods is about 2½ hr. for normal operation. Each absorber section is, therefore, heated for 30 min. every 5 hr. and is absorbing sulphur dioxide vapor and producing refrigeration for about 4½ hr.

Thermostat Control

For purposes of controlling the temperature in the car, a thermostat is used with its temperature-responsive bulb placed within the car. The power element is shown beside the timing device and operates a valve controlling the flow of gas to the timing device. When the car temperature falls to the point for which the thermostat has been set, the thermostat interrupts the flow of gas to the timing device, stopping the latter, and thus suspending the operation of the apparatus. When the car temperature rises above the thermostat setting, gas is permitted to flow again to the timing device, and operation is thus resumed. In this manner the car is kept at any desired temperature, and the refrigerating effect is produced automatically varying with changing atmospheric temperature.

The relative compactness of the silica gel apparatus permits increasing the lading space about 10 per cent. The absorber occupies a space equivalent to that occupied by an ice bunker at only one end of the car. All of the space at the opposite end is available for lading. As the evaporator is placed above the lading and spans the entire length of the car, cooling is not dependent on the longitudinal circulation of the air and the height of the load may thus be materially increased.

In the case of the iced refrigerator car, no control of the temperature is possible, aside from adding salt to the ice, when a somewhat lower temperature is obtained.

Setting the thermostat of the silica gel system to the desired temperature, automatically holds the car to within a few degrees of this temperature. Thus, whether 20 deg. is desired for a shipment of frozen fish, or 40 deg. for cantaloup, a simple adjustment, guided by a pointer on a temperature scale, is all that is required.

Tests have shown that the temperature variation throughout the length of the car is not more than two or three degrees. In the case of an iced car with end bunkers, the temperature at the center of the car is always several degrees higher than that at the ends, and the length of the car is limited by the temperature that can be maintained at the center. The overhead arrangement of the evaporator in this new car makes possible an increase in the length of cars without affecting the uniformity of temperature.

The fuel tanks with which the car is equipped have storage capacity for sufficient fuel to maintain operation for seven or eight days under summer conditions and ten or twelve days with moderate outside temperatures. The car can be precooled in eight to ten hours.

A BILL, approved by the governor, has been introduced in the legislature of New York to change the basis of assessment for the cost of eliminating grade crossings. It is proposed that the state and the city or town, which under the present law, must pay one-fourth each, shall hereafter pay in the proportion of 40 per cent of the whole cost by the state and ten per cent by the municipality. This leaves the assessment on the railroad, 50 per cent, unchanged.

Cincinnati to Have Union Station

Physical conditions impose serious obstacles to development of satisfactory plan

THE opening of a new union passenger station at Cincinnati, which is expected to take place in 1932, will eliminate what is probably the most cumbersome and awkward group of passenger facilities in any large city in the United States. But the very features of local topography and railroad geography which have been responsible for the disadvantages of the existing layout have introduced unusually formidable obstacles in the way of efforts to develop a satisfactory plan for a new station of ample capacity that would avoid the disadvantages of the old ones. Therefore the execution of preliminary agreements by the interested railroads for the construction and use of a new station, announced early in November, demonstrates that the most difficult phase of the terminal problem had been solved; namely, that of determining upon a site and evolving a plan whereby it will become accessible to all the roads having terminals in Cincinnati.

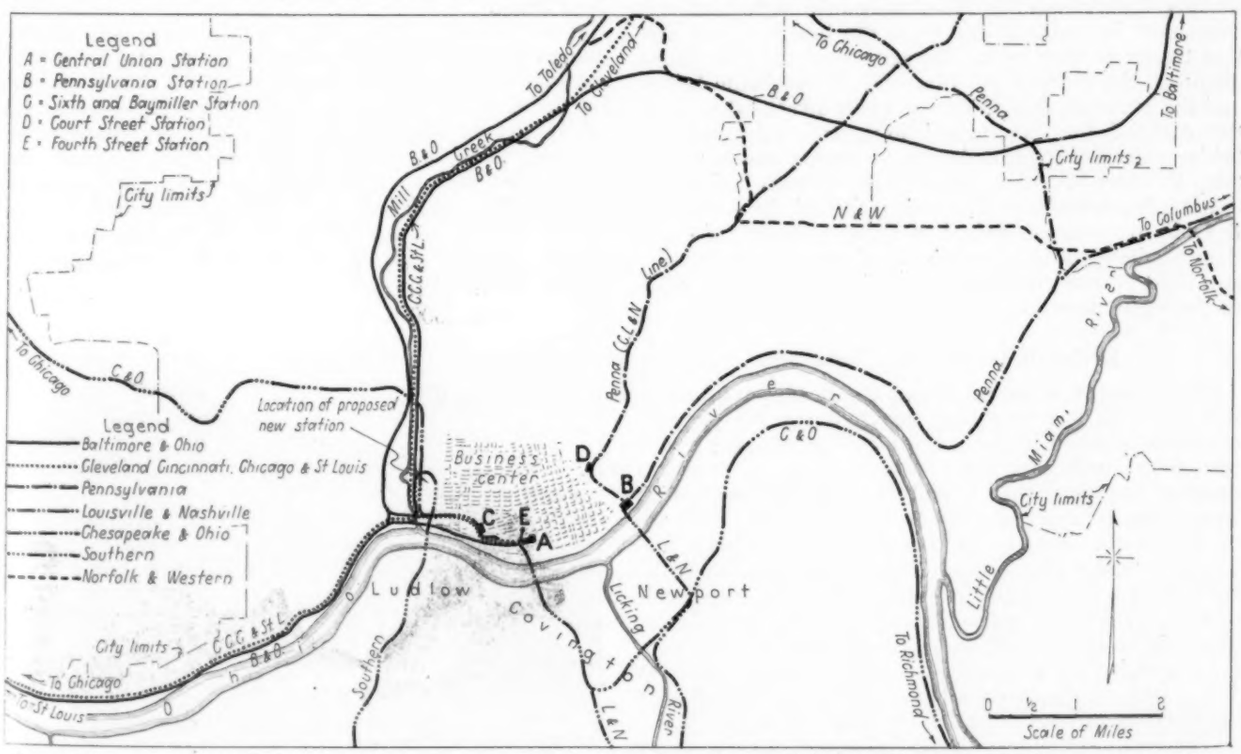
Site Imposes Serious Obstacles

The shortcomings of railroad terminals in Cincinnati, both passenger and freight, arise primarily from physical obstacles imposed by the topography of the city which is built against the face and over the top of bluffs bordering the north bank of the Ohio river, with the main business section occupying a relatively level bench at the base of the bluffs and extending down the slope to the river bank. The north bank of the Ohio river as well as the valleys of two streams, Mill Creek and the Little Miami river which break through the bluff wall, serve as the primary means by which the railroads from the East, North and West obtain access to the city. Moreover the relatively limited areas available to these locations have been intensively developed as railroad terminal and industrial sites.

The three roads approaching the city from the Kentucky side cross the river on three bridges located approximately a mile apart. Owing to the high level of the land on the Kentucky side and to the requirements of river navigation, these bridges cross the river at high levels, thereby imposing the necessity for long approach viaducts in order to reach the level of the railway terminals at Cincinnati.

The Volume of Passenger Traffic

At the present time the number of passengers entering and leaving Cincinnati averages between 18,000 and 20,000 daily, which are handled by 224 inbound and outbound trains, with the use of an average of 1,356 passenger cars. This passenger traffic is served by five stations. Of these stations the largest is the Central Union station at Fourth street and Central avenue, about one-half mile west of the business center of the city. This station is used by all of the trains of the Big Four, the Baltimore & Ohio and the Southern, and by eight trains of the Louisville & Nashville. The next largest station is the Pennsylvania (Louisville & Nashville) station at Pearl and Butler streets, three-quarters of a mile to the east of the business center, which is used by all trains of the Pennsylvania except eight which enter and leave the Court Street station, the old terminal of the Cincinnati, Lebanon & Northern line of



The Railway Terminal Layout at Cincinnati, Showing the Location of the Existing Passenger Stations and the Site Selected for the New Union Station

the Pennsylvania. Six trains of the Norfolk & Western also use the Pennsylvania station, but two other trains of the Norfolk & Western enter and leave at the Court Street station.

Of the Chesapeake & Ohio trains, 10 use the Central Union station and 6 use a small terminal located nearby and owned by that road, which is known as the Fourth Street station. The Louisville & Nashville divides its patronage among three passenger stations, having 13 trains which use the Pennsylvania station, 8 which enter the Union Station, as stated above, and 2 which make use of the Fourth Street station.

Three Baltimore & Ohio local trains use the old Sixth and Baymiller streets station where the major portion of Baltimore & Ohio express business is also handled.

Stations Are of the Stub Type

All stations in Cincinnati are of the stub type and, considered superficially, this would seem to meet the local requirements to the best advantage because Cincinnati is the terminal for the trains of all roads entering it with the exception of those moving over the main line of the Baltimore & Ohio between St. Louis and the East. However, the growth of through passenger business between points on the Pennsylvania, the Baltimore & Ohio and the Big Four, and points on the three southern roads and beyond, has resulted in a considerable through-car and through-train movement between the northern and southern roads, and convenience in handling this character of traffic is not readily obtained in the stub type of passenger station.

Another difficulty attending the operations of the existing stations, arises from the lack of convenient access for the trains approaching the stations over the Ohio river bridges. For example, the north end of the Chesapeake & Ohio bridge is located so close to the Central Union station that it was necessary to extend the approach to the west away from the station, thereby making it necessary for trains to go through a reverse movement in order to get from the bridge to the station tracks or vice versa. Exactly the same conditions obtain in the case of the Louisville & Nashville bridge and the Pennsylvania station at Pearl street, whereas in the case of the Southern bridge, trains leaving the bridge must make a complete loop, approximately a mile long, in order to obtain access to the Central Union station approach tracks. Through trains of the Baltimore & Ohio are also compelled to make a detour of more than a mile in order to reach the Central Union station and must be carried around a wye in order to be headed in the right direction when continuing the journey.

Difficult to Select a New Site

By reason of these conditions the need for new station facilities has long been realized, but the physical obstacles imposed in the way of any project for a new station are such that it has taken protracted study to develop any plan that would be practical and which would also be acceptable to all the railroads. Because of the traffic interchange between the northern and southern railroads, it was highly desirable that the roads be served by a single station, but it was impossible to find any site that would be conveniently accessible to all of the lines, because of the many different directions from which they approach the city. Another difficulty was a lack of any suitable location that was not already occupied by railway or industrial improvements.

The location finally adopted and agreed upon is in the Mill Creek valley, somewhat less than a mile north of the Ohio river and about a mile and one-half west of the business center in an area occupied by local facilities of the Southern. This site affords direct access for the Big Four, the Baltimore & Ohio, the Southern and the Chicago line of the Chesapeake & Ohio. It can be reached readily by the Louisville & Nashville and the Chesapeake & Ohio from the Chesapeake & Ohio bridge. However, for the Norfolk & Western and the Pennsylvania access must be had from the north and east over the lines of the Baltimore & Ohio.

As all the trains from the eastern lines of the Baltimore & Ohio and the Big Four, as well as all the trains of the Pennsylvania, the Norfolk & Western and the Chicago line of the Chesapeake & Ohio, will approach the new station from the north, while all other trains will approach from the south, it has been decided to construct a through station with its main axis north and south. Tentative plans for this station provide for 24 tracks having capacities ranging from 9 to 20 cars each. This layout will provide a capacity 50 per cent in excess of the present requirements. The station will be of the two-level type, having a transverse train concourse on a level below the tracks with access to the platforms by means of stairways or ramps. The exact character of the head-house, which will be located east of the track layout, has not yet been determined. The project will also include provision for the necessary mail, baggage and express facilities, as well as an engine terminal and coach yard to take care of equipment of all roads using the station, with the exception of the Southern which will continue to use its own facilities.

As the site comprises low bottom lands subject to inundation during succeeding periods of high water in the Ohio river one of the most important problems of the development will be a careful study to insure that the terminal will be free from interruptions of service during floors. Besides the extensive filling that will be necessary to place the tracks at a safe elevation, the project imposes the requirement of a channel change in Mill creek.

The terminal improvements will be made by The Cincinnati Union Terminal Company, a corporation organized for this purpose, the stock of which will be owned by the participating railroads. Henry M. Waite, formerly city engineer of Cincinnati and city manager of Dayton, Ohio, has been appointed chief engineer for the project with C. A. Wilson, formerly chief engineer of the Wheeling & Lake Erie and the Cincinnati Hamilton & Dayton as consulting engineer. The new passenger station facilities are estimated to cost approximately $35,000,000.

* * *

Refrigerator Car Built for the Canadian National by the Eastern Car Company, Ltd.

Has Growth of Facilities Kept Pace With Traffic?

Percentage of increase in investment in road and equipment has exceeded that of ton-miles—Improved equipment utilization

THERE is always an interesting question as to whether the growth of railway facilities is currently keeping pace with the expansion of railway traffic and with the public's demands for satisfactory and efficient service. There are several factors that would lead the observer to believe that progress in this direction has in general been quite satisfactory. We know, for example, that the carriers have been expending in recent years about three-quarters of a billion dollars annually for additions and betterments to their physical plant. We also know that these large capital expenditures have enabled the carriers to effect substantial improvement in their efficiency of operation, although it is a matter for some concern that the money return on the new capital expenditure has not proved as great as seems desirable or necessary. As concerns the service to the shipper, there is general agreement that railroad performance has now become more expeditious and generally satisfactory than ever before in railroad history.

A peculiar feature of the capital expenditure programs has been a gradual change during more recent years whereby a progressively smaller proportion of the total of additions and betterments has been devoted to equipment and a correspondingly larger proportion to fixed property, such as yards and terminals, grade revisions, stronger bridges, signals and interlockings, grade crossing eliminations, etc. The general impression is that the spending of the proportionately smaller sums for new cars and locomotives has been made possible by increased utilization of the equipment supply.

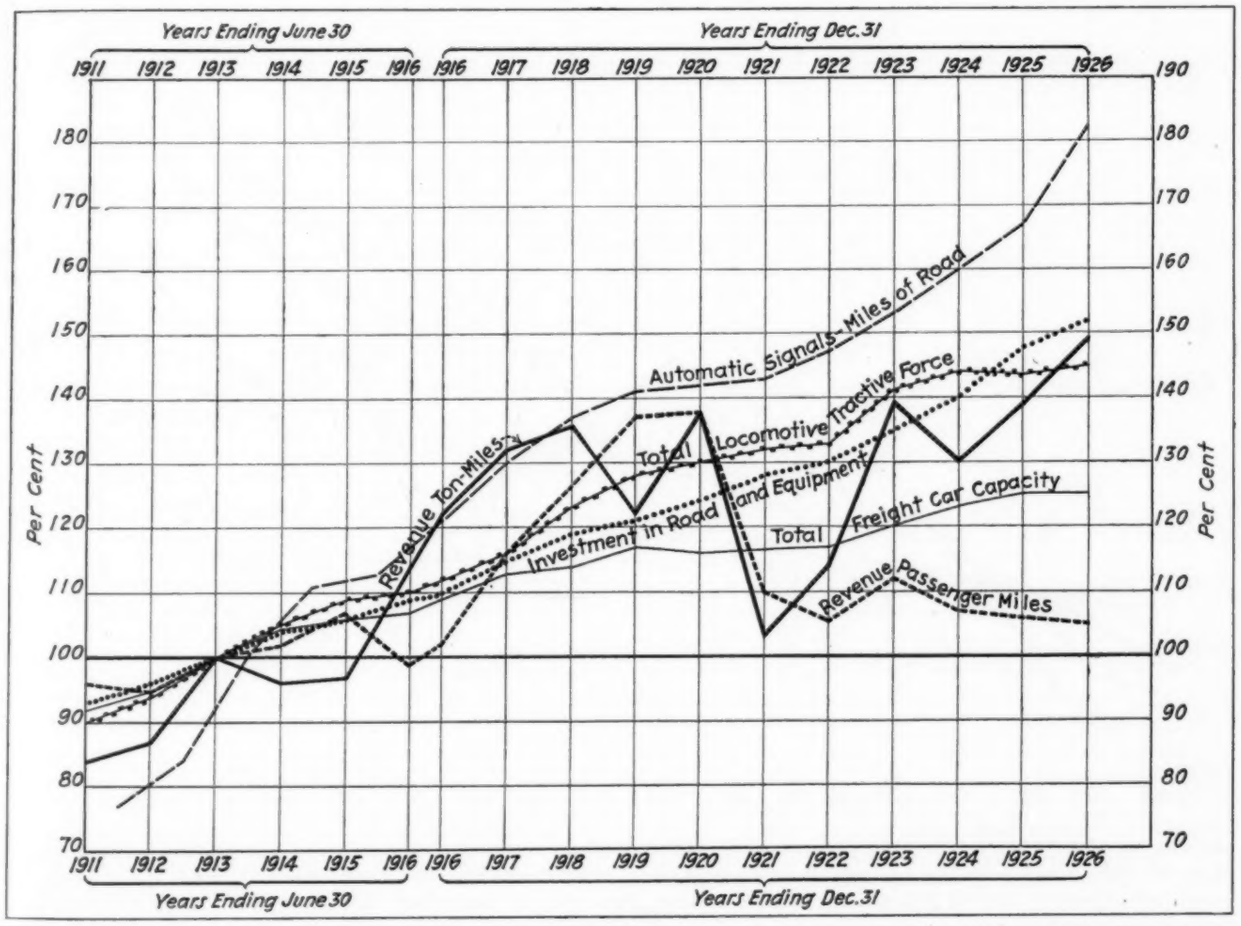


Chart 1—Comparison of the Growth of Railway Traffic with Increase in Railway Facilities, Presented in Percentage of 1913 as 100.

The various factors mentioned have been made the subject of much discussion and analysis, but thus far the tendency has been to discuss each of the topics more or less separately. This article is intended as an attempt to relate the several factors that the varying trends and

relationships may be compared with one another. Charts will be used as the means of presenting the picture. In general, their purpose will be to compare the growth of railway facilities with the growth of traffic; to show, in so far as possible, the relative rate of increase of the different kinds of facilities, and to analyze certain indices which give a measure of the utilization of the facilities in question.

Charts in Two Series

The charts are in two separate series. Those in the first series are based on the statistics of the Class I railroads presented in Statistical Summaries Nos. 3 and 7 of the Bureau of Railway Economics. The figures cover the years from 1911 to 1926 and are charted as ratios or percentages of the figures for the year ended June 30, 1913.

The charts of the second series present the operating statistics which are reported to the Interstate Commerce Commission on its monthly operating statistics forms. These figures, originated in the work of the Operating Statistics Section of the United States Railroad Administration, were later prescribed by the I.C.C., and are available in their present form only as far back as 1920. The annual totals or averages are presented for the years 1920 to 1926 in the form of ratios or percentages of the year 1920. In addition, there are also projected the ten-months figures for 1927, the latest at present available, the projection being in the form of the ratios that the figures for the first 10 months of 1926 and 1927 bear to those of the first 10 months of 1920.

Investment Maintains Parity with Traffic Growth

Chart 1 gives the comparison of the growth of traffic and facilities, from 1911 to 1926. The basic curve on this chart is that of revenue ton-miles. Since the purpose of railway facilities is to move the current volume of ton-miles and since the degree of utilization of these facilities varies from year to year with the traffic, this freight traffic curve also appears on each of the other charts. It thereby supplements the scale in facilitating the comparison of the curves on one chart with those on the other charts.

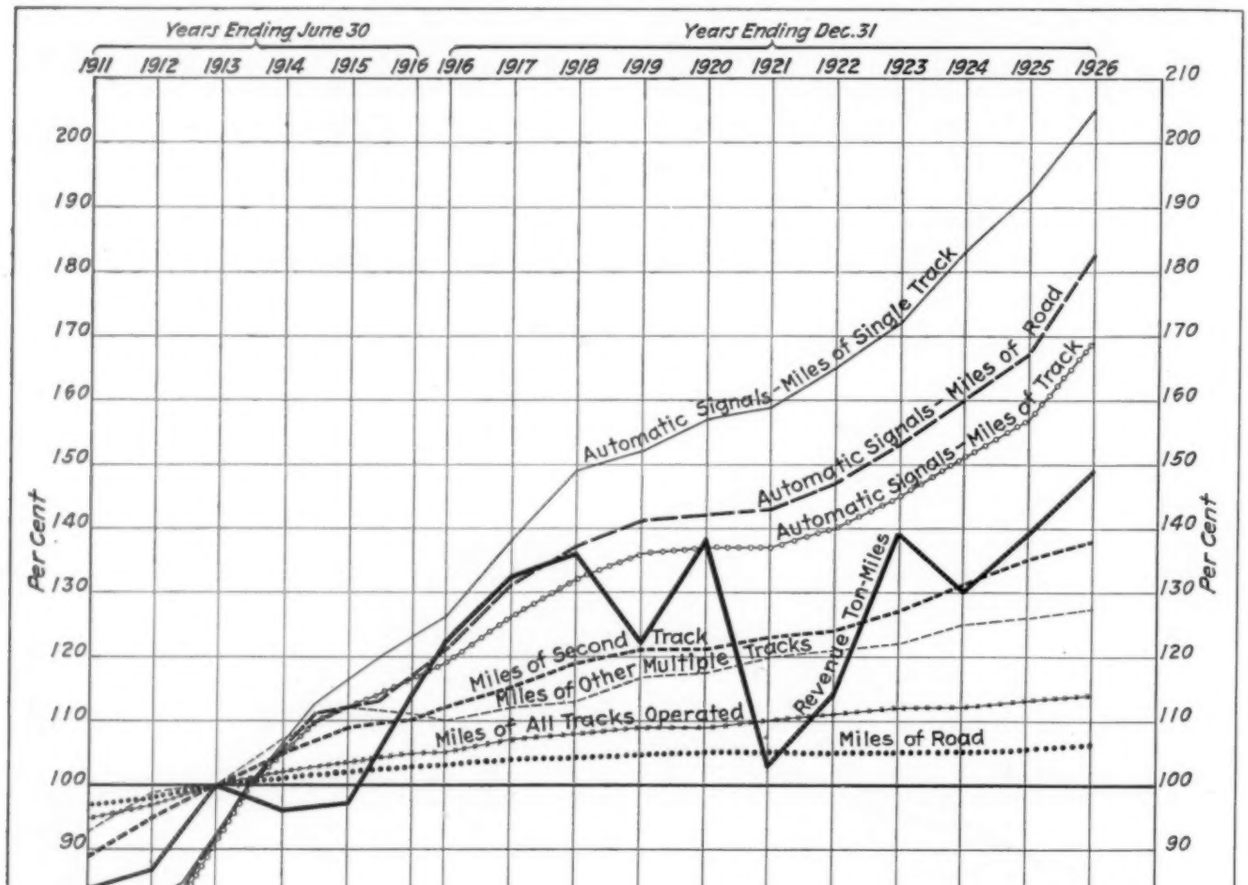


Chart 2—The Increase in Mileage of Automatic Signals Compared with the Increase in Miles of Road, and Mileage of Second and Other Multiple Tracks, Presented in Percentage of 1913 as 100.

The curve of revenue ton-miles shows the expansion of freight traffic during the War and in the peak years since, which include 1920, 1923 and 1925. It also makes evident the substantial increase in ton-miles in 1926 which enabled that year to break all previous records of freight traffic volume. In 1926, as compared with the base year 1911, the ton-miles had shown an increase of

49 per cent. In contrast is the record for revenue passenger miles, the peak for which was reached in 1920 with a percentage increase over 1913 of 38 per cent, but which by 1926 had decreased to a point where the index number had shown an increase of but 5.

Next in interest is the curve of investment in road and equipment which shows a progressive rise to a present increase in 1926 of 52. This curve is particularly significant because it runs below the ton-mile curve from 1916 to 1920 and was again below it in the peak traffic year of 1923. Indeed, 1925 and 1926 are the only years of heavy freight traffic in which the proportionate increase of the investment in road and equipment over 1913 had become large enough to exceed the proportionate increase in the freight traffic. This reflects the large capital expenditure program of the past four or five years and apparently justifies the general impression that 1926 seems to bear out the contention of many observers that signals have proved their economic value. More practically, it is to be presumed that the marked extension of mileage of automatic signalled line is due to the efforts of the signal engineers to show how effectively signals can be made to increase track capacity and assist in economy of operation through the avoidance of delay and the resulting faster train movement.

Multiple Tracks and Signals

This growth of automatic signal mileage proves so substantial as to warrant somewhat further and more detailed analysis. This is the purpose of Chart 2, in which the miles of automatic signals are shown in three categories and compared with all miles of railroad line and track, the presentation, as in Chart 1, being in the form of the ratios of the figures for 1913. The chart

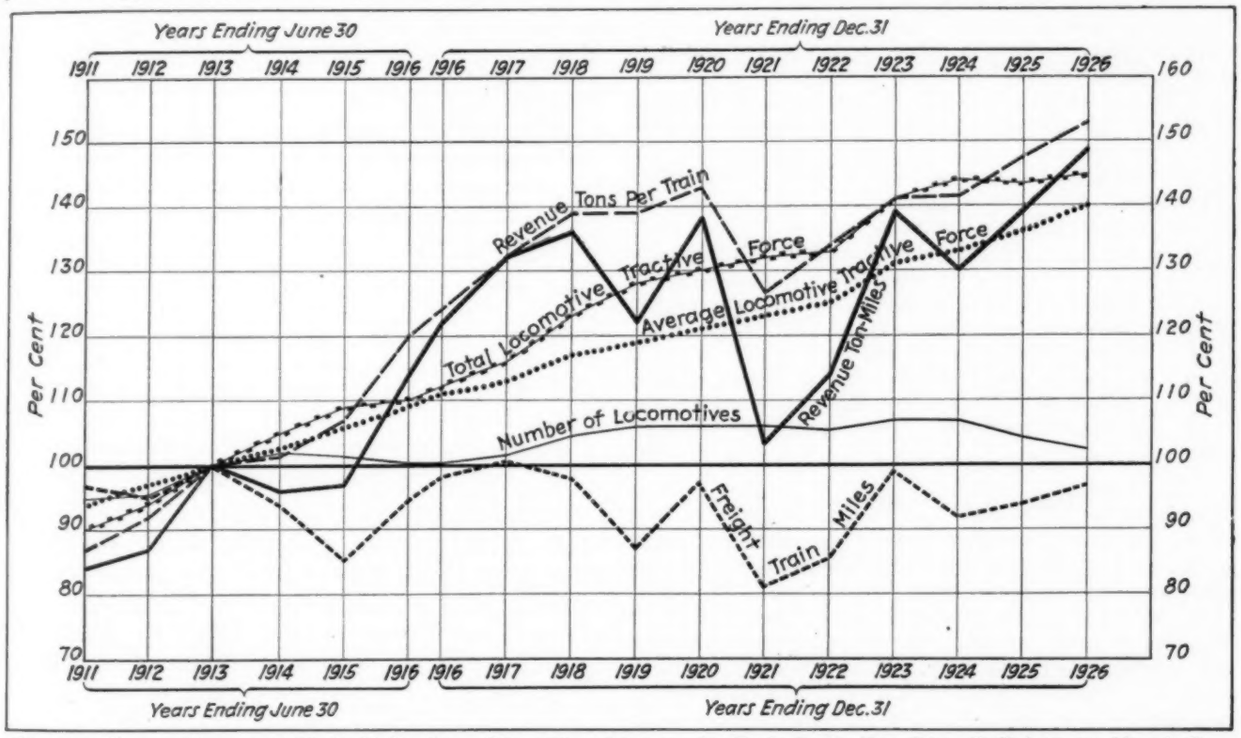


Chart 3—Locomotives and Their Utilization—Note That Increase in Train-Load Has Been Sufficient to Absorb Increase in Ton-Miles so That There Has Been No Increase in Freight Train-Miles. 1913 Taken as 100.

the excellent railway service and the increasing economy of operation of the past two or three years have been made possible by the railways' willingness to spend money to save money, or for the purpose of increasing the capacity of the transportation machine.

Locomotives, Freight Cars and Signals

The chart also compares the growth of three kinds of facilities: namely, total locomotive tractive effort, total freight car capacity and signals. It will be observed that the growth of total freight car capacity has decidedly trailed the other factors presented on this chart. The opposite has been true of total locomotive tractive effort, the curve of which rose higher than that of investment in road and equipment until 1925 when the tractive effort growth ceased, and increased locomotive utilization took the place of increased hauling capacity.

The growth of the miles of road equipped with automatic block signals had been so substantial as to be absolutely spectacular. It shows a 1926 index number of 182. The particularly marked rise in the years 1923 to needs little explanation. It shows very little growth in miles of road since 1913. Miles of second-track, however, showed an increase in 1926 over 1913 of 38 per cent and miles of other multiple main tracks, an increase of 27.5 per cent. The miles of single track equipped with automatic block signals showed an increase over its 1913 total of no less than 115 per cent. The curve of miles of road equipped with automatic block signals is the same as that presented in Chart 1. It shows a 1926 increase of 82 per cent, while total miles of automatic signalled main tracks shows an increase of 69 per cent. The evidence, of course, is that the greatest expansion of signalling has been on single track lines. It might be interesting to know how much of the activity in this direction was for the purpose of increasing track capacity to avoid the necessity of adding a second track.

It should be noted that the data for the automatic signalled mileage was not taken from the Bureau of Railway Economics Statistical Summaries but from the report of block signal mileage issued by the Interstate Commerce Commission, Bureau of Safety. The reports

are for calendar years throughout in distinction from the other railroad figures which, prior to 1916 were given tor fiscal years ended June 30. There was another complication in that the signal figures include mileage of interurban electric lines and Class II steam carriers, as well as a large mileage of duplications of track used by two or more railroads.

In the percentages presented in the charts the interurban electric lines and the duplicate mileage have both been omitted throughout with a consequent lowering of the signal curves under where they would be if the actual figures of the Bureau of Safety had been used without this highly necessary correction.

Improved Equipment Utilization

The supposition is that the reason that the carriers have not bought more cars and locomotives in the past four years is increased utilization. Chart No. 3 gives an opportunity to make a check of this theory and it is seen to be borne out. The chart relates to locomotives. It compares the growth in the number of locomotives, the increase in the average and total locomotive tractive effort, the train-load, the train-miles and the revenue freight ton-miles. The significance of this chart is easily interpreted. Its most important message is that the revenue train-load has so increased that it has been sufficient to take care of the increased traffic without the necessity of increasing the train-miles. Thus, it appears that the number of freight train-miles in each of the years of heavy traffic, namely 1916, 1917, 1918, 1920, 1923, 1925 and 1926, was not far from being the same as in 1913. Indeed, there was even a slight improvement in 1926 because with 49 per cent increase in traffic over 1913, the freight train-miles were actually 3 per cent less.

James J. Hill's Statement

One might with propriety refer to the statement made by James J. Hill that revenues are according to the ton-mile, but expenses according to the train-mile. However, even this very satisfactory showing of the relation of increasing ton-miles with no-increasing train-mileage does not tell the whole story. There has been a further important trend in the direction of increased economy and efficiency in the form of a substantial decrease in the train-hours of such nature as to deserve special and separate consideration.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended February 4 amounted to 926,204 cars, a decrease of 39,460 cars from the corresponding week of 1927 and an increase of 11,713 cars over 1926. Loading of grain and grain products, livestock, and forest products was larger than a year ago but that of other commodities was smaller. Coal loading amounted to 180,636 cars, a decrease of 38,440 cars from the corresponding week of last year. Loading in the Northwestern district only was larger than last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, February 4, 1928

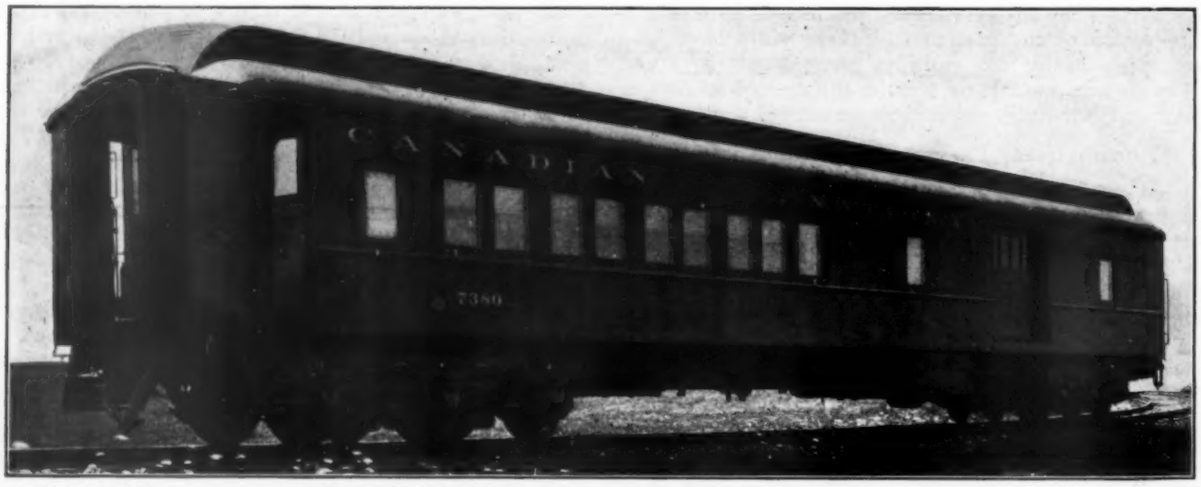
DISTRICTS	1928	1927	1926
Eastern	211,491	220,724	203,838
Allegheny	180,105	198,914	185,301
Pocahontas	50,768	60,478	54,582
Southern	149,461	156,863	149,446
Northwestern	120,488	114,433	116,732
Central Western	138,087	138,257	129,331
Southwestern	75,804	75,995	75,261
Total Western Districts	334,379	328,685	321,324
Total All Roads	926,204	965,664	914,491
COMMODITIES			
Grain and Grain Products	53,788	46,880	44,685
Live Stock	35,277	27,728	29,460
Coal	180,636	219,076	175,964
Coke	11,368	12,248	18,852
Forest Products	69,379	67,997	71,705
Ore	7,660	11,626	9,939
Merchandise L. C. L.	249,170	252,236	248,327
Miscellaneous	318,926	327,873	315,559
February 4	926,204	965,664	914,491
January 28	902,832	943,879	925,696
January 21	884,095	936,160	921,643
January 14	906,734	942,731	931,735
January 7	754,062	933,890	907,622
Cumulative total, 5 weeks	4,373,927	4,722,324	4,601,187

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended February 4 totalled 64,971, an increase over the previous week of 2,867 cars and an increase over the same week last year of 5,475 cars.

Week ended	Total cars loaded	Total cars rec'd from connections
Feb. 4, 1928	64,971	39,571
Jan. 28, 1928	62,104	36,679
Jan. 21, 1928	63,168	35,509
Feb. 5, 1927	59,496	37,954
Cumulative totals for Canada		
Feb. 4, 1928	308,801	177,382
Feb. 5, 1927	293,273	176,041
Feb. 6, 1926	273,441	171,420

* * *



Combination Baggage and Smoking Car Built by National Steel Car Corp., Ltd., for the Canadian National

Charge I. C. C. Trying to "Equalize Prosperity"

WASHINGTON, D. C.

SECTIONAL dissatisfaction with various rate decisions of the Interstate Commerce Commission which have affected the competitive situation between rival communities found expression in a resolution adopted by the Senate on February 9, instructing the commission to report to Congress regarding its decisions for the past five years "if any," which have been "in any sense influenced by the competitive advantage or disadvantage of the producers in one state, district or section as compared with the advantage or disadvantage of the producers in another state, district or section," together with a statement of the statutory or constitutional authority "under which the commission claims and believes it was granted the power to equalize prosperity among the producers of commodities."

The resolution was introduced the day before by Senator Robinson, of Arkansas, who said, "it is claimed that an abuse of the power of rate regulation has been committed." He did not indicate what particular decisions he had in mind, although it is understood that some of his constituents do not like the way the commission has been trying to readjust the class rates of the Southwest on a mileage basis, but the decision in the lake cargo coal rate case was most prominently mentioned in the debate. It was offered as a concurrent resolution, S. Con. Res. 10, and so requires the action of the House to become effective. It was adopted by a vote of 68 to 1, Senator Bruce, of Maryland, being the lone dissenter.

The text of the resolution follows:

Whereas the Congress has been memorialized by State legislatures and by citizens to the effect that the Interstate Commerce Commission has attempted so to regulate rates of transportation as to equalizer prosperity among producers of commodities and to the end has employed rate regulation to place an embargo upon the products of certain States and in order to favor the products of other States as to certain markets;

Whereas these memorials and petitions indicate the assumption of a power not vested in the commission and a discretion which the Congress can neither exercise nor confer; and

Whereas it is advisable that the Senate should have full and complete information concerning the subject complained of: Therefore be it

Resolved by the Senate (the House of Representatives concurring), That the Interstate Commerce Commission be requested, and is hereby, instructed to transmit to the Congress on or before the 15th day of April, 1928, the following information, to wit: (a) Copies of all decisions (if any) handed down by it in the five years preceding the 1st day of April, 1928, in which its decisions as to the reasonableness of any rate or rates was in any sense influenced by the competitive advantage or disadvantage of the producers in one State, district, or section as compared with the advantage or disadvantage of the producers in another State, district, or section; (b) a full and complete citation of the section or sections of the interstate commerce act as amended, and other acts, under which the commission claims and believes it was granted the power to equalize prosperity among the producers of commodities; and, a statement of the clause or clauses, articles, or amendments of the Constitution under which it claims and believes that decisions of such a character and purport were authorized or were implied.

The resolution was debated at some length on February 9 and at the suggestion of Senator Shortridge Senator Robinson agreed to amend it to read "copies of all decisions, if any," but a similar qualification was not applied to the statement that the commission "claims and believes it was granted the power to equalize prosperity. . ."

Some of the speakers apparently believed that the commission has been trying to "equalize prosperity" through its policy of favoring mileage rates in many cases, while others based their criticism on the ground that it has allowed rates to be made with little regard for distance to enable more distant sources of production to compete with sections located nearer to the consuming market. In the lake cargo case it is being loudly criticised for suspending a reduction in rates made to enable the more distant southern coal fields to compete with the northern fields whose rates the commission reduced. On the other hand, Senator Trammell, of Florida, said that the Commission has allowed rates on citrus fruits for a haul of 3,000 miles (from California) practically the same as for a haul of 1200 miles (From Florida).

Senator Barkley, of Kentucky, was the principal speaker in favor of the resolution, saying he was very much concerned about securing the information called for, "because in my judgment the Interstate Commerce Commission has rendered decisions not based upon the justice or reasonableness of freight rates per se, but has rendered decisions in order that business might be diverted from one section of the country to another." He seemed to think that the commission had based decisions of this kind on a proviso in section 15a of the transportation act, that the commission shall have reasonable latitude to modify or adjust any particular rate "and to prescribe different rates for different sections of the country," and said that that was not the purpose of the proviso.

Mr. Barkley particularly called attention to the decision in the lake cargo coal rate case, saying that it was claimed that the economic situation of one section was the compelling motive of the commission in providing for a reduction in rates from Pennsylvania and Ohio, and that the commission is "declaring that it has the power to say that the coal operators of the state of Pennsylvania, through a reduction of 20 cents a ton on coal shipments to the lake ports, shall be allowed that advantage in an effort to overcome economic and industrial conditions over which the commission has no power and thereby deprive other coal-producing sections of the country of the opportunity to market their coal along the lake ports."

After referring to the controversy caused by the President's appointment of a commissioner from Pennsylvania, which was not confirmed by the Senate, Senator Barkley said: "The very circumstances that brought about the change in the attitude of the commission, the drive from the senator from Pennsylvania, the onslaughts of criticism hurled at the commission by him, make it extremely unwise that either Congress or the commission should set itself up or should create an agency that would place the power of deciding the welfare and fate of one community as against another altogether on the basis of economic or industrial conditions, because whenever that condition is brought about every senator, every community, every section of our country, will be demanding that there shall be somebody appointed upon the Interstate Commerce Commission to be a special pleader for the industries in that particular section of the country.

"That is not all. Not only in that case but in numbers of cases this tendency of the commission to try to adjust unequal economic and industrial conditions has been assumed by them. There have been requests made in 35 cases by railroads to reduce rates from one section to another, and in those 35 cases the Interstate Commerce Commission has denied the railroads the right to reduce the rates. I do not contend that all of these denials were based upon the assumed authority of

the commission to pass on the economic conditions of various sections of the country, but some of them are, and a large portion of them are. There are 35 cases in which the commission denied a reduction of rates applied for by the railroads themselves, and there are only 9 cases where the commission has permitted the railroads to reduce their rates accordingly.

"There are seven cases in which the commission itself has initiated a raise that was not desired by the railroads nor by the commercial interests that they served, but in order that the economic and industrial conditions of various sections of the country might, through the medium of freight rates, be equalized, and therefore the people in one section denied the right to take advantage of their natural location or the quality of their products in the markets of the Nation.

"If this tendency of the commission is to be continued, I shall certainly offer an amendment to the interstate commerce act which will make it impossible for the commission to set itself up as a judge as between sections of our country, with power to decide that one section shall be prosperous and another shall undergo adversity by reason of freight rate maneuvers."

Senator Bruce, of Maryland, said that the Hoch-Smith resolution is more responsible than the commission for the abuses or the alleged abuses of which the senator from Kentucky had been speaking. He opposed the resolution on the ground that it involves "a reflection, a real, opprobrious reflection, on the Interstate Commerce Commission," which made Senator Robinson very indignant. He declared that there is "not a word in it which any mind except that of the senator from Maryland can interpret into an unfair criticism."

The criticisms of the commission broke out again in the Senate on February 13 when Senator Glass, of Virginia, and Senator Barkley, of Kentucky, presented resolutions adopted by their state legislatures protesting against the action of the commission. Senator Swanson, of Virginia, also spoke of the "arbitrary power which is now arrogated to itself by the Interstate Commerce Commission," and Senator Pittman, of Nevada, and Senator King, of Utah, joined in with some remarks about the enforcement of the long-and-short-haul clause.

The resolution of the Virginia legislature asserted that the commission in recent decisions and opinions has construed the law "to confer upon it the authority not to regulate the conduct of interstate commerce, but to control it to the extent of excluding the commerce of certain states from competitive markets outside their borders and of giving a monopoly of trade in those markets to competitors in other states," and that this construction "will work inevitable and fatal injury to the interchange of all business between the states, and therefore to the general welfare of all the people, and said decisions have already proven injurious to the coal, agricultural, horticultural, manufacturing and fishing industries of Virginia by directly impairing its internal business in interstate commerce."

Therefore the senators and representatives of Virginia in Congress were requested "to do everything in their power to effect such changes in the federal statutes as will prevent a repetition of such decisions and to have said statutes so amended as to make the construction thereof aforesaid impossible."

Senator Glass said he did not participate in the opinion that there is any necessity of amending the statute itself therein referred to. "I think," he said "the trouble lies in the Interstate Commerce Commission rather than in the statute, and in an utter perversion of its power. I think its recent decisions involve a usurpation of power that constitutes a positive menace to industry and to the commerce of the country. At an appropriate time I shall undertake to demonstrate that fact to the Senate and shall do all that within me lies to correct the vice at its source, which is the Interstate Commerce Commission itself."

Senator Swanson took the position that the commission "has arrogated to itself the power to fix rates on all railroads to control competition, to control markets, to say who shall and who shall not sell goods in certain markets, and that certain sections and states shall be controlled by its imperial industrial will."

The resolutions of the Kentucky legislature declared at some length that the commission "has adopted the policy of increasing the disparity between the rates of competing producers and shippers and steadily increasing the freight rate disadvantage of the long-haul shipper by making distance the sole measure of rates," and that it is "further exercising its powers to prevent carriers from reducing rates where such reductions are necessary in order to enable shippers served by such carriers to compete in the markets, and where the carriers proposing such reductions are able to make same without causing a burden on other traffic." It was also declared that the majority opinion in the lake cargo coal rate case "is illustrative of these tendencies on the part of the Interstate Commerce Commission and its method of fixing railroad rates, particularly on coal, all of which we deem unsound, unlawful and dangerous." Therefore the Senate was requested not to confirm the appointment of Commissioner Esch because he has shown by his votes that he "endorses, supports and advocates the objectionable, dangerous and unlawful tendencies of the commission hereinbefore set out."

Senator Pittman was "very much delighted to ascertain that a number of senators have discovered the fact that the Interstate Commerce Commission is usurping power that was not granted to it by the Congress," but his complaint was that the commission had allowed rates to favor the long-haul shippers. Senator Glass said, however, that "the intricacies of the long-and-short-haul problem are not at all involved in the recent decisions."

* * *

The N. Y., N. H. & H. "Merchants Ltd." Near Sharon, Mass.

Automatic Interlocker Effects Saving

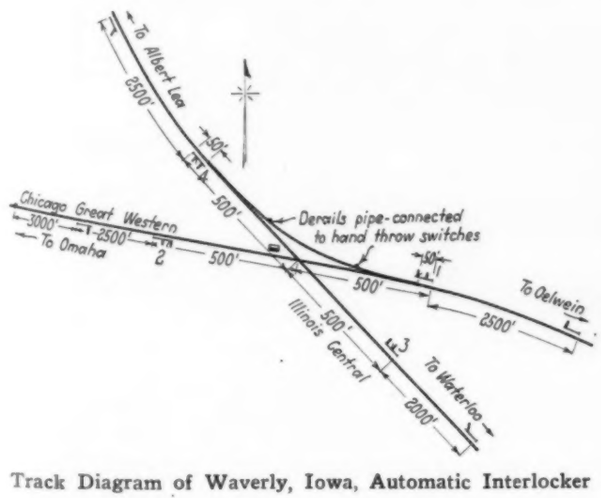
AN automatic interlocker was recently placed in service at the crossing of the single-track lines of the Chicago Great Western and the Illinois Central, near Waverly, Iowa, which is controlled automatically by approaching trains, replacing a 16-lever mechanical interlocking plant that required a leverman for each of three tracks. The "out-of-pocket" cost for new materials and labor to make this change was about $6,500, while the operating expenses of the old mechanical plant, including towerman's wages, fuel and other supplies not required with the automatic plant, totaled about $5,000 a year. The new arrangement, therefore, shows an estimated saving such that the job will pay for itself in about 16 months' time.

Traffic and Methods of Operation

The two lines involved in this crossing include the single-track main line of the Chicago Great Western from Oelwein, Iowa, to Omaha, Nebr., and a single-track line of the Illinois Central from Waterloo, Iowa, north to Albert Lea, Minn. On the Great Western the traffic includes two through passenger trains, a mixed train and about four freight trains each way or a total of about 14 to 16 trains daily. The traffic on the I. C. approximates the same number of trains.

In the previous mechanical plant, annunciators warned the leverman of the approach of a train, giving him plenty of time to line up the derails for the route and clear the signals for the trains. With the new automatic plant no derails are used. Trains on both roads are required by rule to approach the plant and pass over the crossing at a speed of less than 15 m.p.h.

In order to illustrate the operation of the plant the following description of the movement of an eastbound

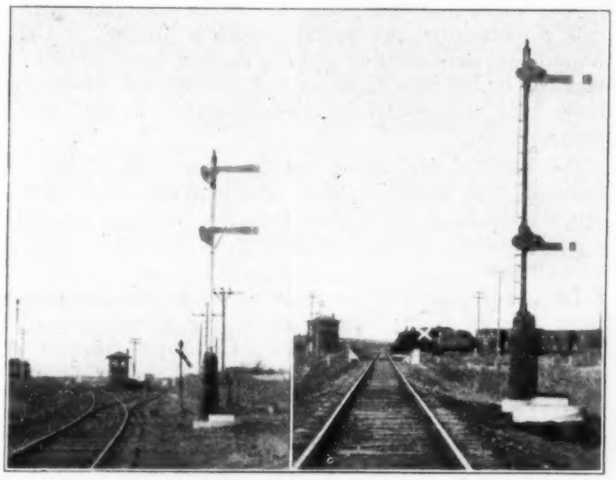


Track Diagram of Waverly, Iowa, Automatic Interlocker

C. G. W. train is given as typical: The train, upon approaching the plant, enters an advance track section and causes the electric light in the fixed distant signal to be lighted. On passing the distant signal, another track circuit is shunted and through a simple circuit arrangement employing ordinary signal relays, a check is made automatically to determine that no train is occupying the plant and that the approach sections of all other signals are unoccupied. If everything is safe the eastbound C. G. W. home signal moves to the clear position, allowing the train to continue through the plant without stopping.

Clearing

In case one train is following another, the home signal will not clear for the second train until the first train has cleared the plant beyond the opposing home signal. If a train is occupying the plant and another train approaches on the other road, the home signal on the other line will not clear for the second train until the first train clears the plant. The automatic operation



Left—Slow-speed Home Signal on C. G. W.; Right—I. C. Home Signal

of the plant has been satisfactory in handling all trains without delay.

Change-Over Was Accomplished for $6,500

The mechanical interlocking plant at this crossing had been installed in 1906, and was in comparatively good condition when dismantled. The four electrically-operated semaphore signals for the old mechanical installation had been used previously as distant signals and were in good condition. They were moved in toward the crossing and now serve as the home signals for the new automatic plant. The old mechanical home signals, in turn, were moved out and now serve as the fixed distant signals. On the Great Western, two-arm home signals are used, the lower arm being inoperative, and the upper arm operating in two positions, 0 and 60 deg. in the lower quadrant. The Illinois Central also uses two-arm home signals but the upper arm is inoperative while the operative arm is 13 ft. lower and operates to 45 deg. in the upper quadrant. This low spacing and short blade is the I. C. standard aspect for a low-speed caution signal, which was considered desirable at this plant.

Salvage

The derails, pipe lines, interlocking machine, etc., were removed and salvaged. The two switches for the connecting track were disconnected and equipped with ordinary hand-throw switch stands and switch circuit controllers as is the practice in automatic block signal territory.

The tower, a brick structure, was not dismantled and is now used as a maintainer's shop and storeroom as well as for housing some of the control relays for the crossing signals.

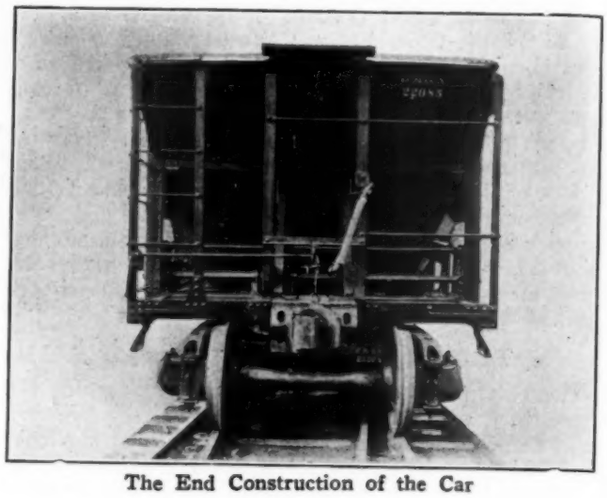
Modern Ore Car

THE Duluth, Missabe & Northern has recently added to its large fleet of ore carrying equipment a new design of ore car, developed as a result of experiments and tests conducted during the past few years with many types of cars. The illustrations give a good idea of this new car, 125 of which were recently built at the plant of the General American Car Company, East Chicago, Ind.

The new D. M. & N. car has a carrying capacity of 81 tons of ore. On account of pocket spanning in the dock construction, the overall length is limited, and although previous designs of cars carried much less tonnage, extended investigation and preliminary designing made this substantial increase possible in the same length of car.

The method of loading ore by steam shovels which work at high speed requires dropping as much as 15 tons of ore from the dipper into the cars from a considerable height, making necessary an extremely sturdy construction.

The underframe is made of cast steel in one piece, these frames being furnished by the Commonwealth Steel Company, St. Louis, Mo. The superstructure is built of heavy plate and heavy structural shapes arranged to afford complete and rapid self-clearing of the lading at the docks into pockets beneath the tracks, from which pockets the ore is discharged into boats.



The End Construction of the Car

D. M. & N. Ore Car Built by the General American Car Company

Will Facilitate Ore Handling

Trucks are provided with Dalman type cast steel side frames, 6-in. by 11-in. journals and rolled steel wheels. Empty and load brakes are furnished. The door operating mechanism and other features are of the latest Enterprise design.

It is predicted that this car will greatly facilitate the operation of ore handling from mines to docks, not only on account of its increased carrying capacity but because of the improved self-clearing features, rigid construction and convenient door operating mechanism. No greater demand can be made on any type of car to withstand continuous rapid and heavy loading than is required of ore cars, which must operate efficiently and with minimum attention during the entire ore season. The new car is designed to meet these extremely severe service conditions satisfactorily.

PORT STATISTICS AT NEW ORLEANS show the arrival there from Newfoundland and Scandinavian countries, within five months ending with January, 21,905 rolls of news print paper—(or approximately 14,000 tons, assuming the rolls to be of standard size). The volume of this traffic in the same period of 1926, was 11,360 rolls.

The Case for the Container

Apparent advantages to railroad and shipper summarized with an opinion on design and operation

By Bernard Allen
The Scarr Transportation Service, New York

THE benefits to be derived from container operation depend to a large degree on the extent to which it is used. Small individual operations on a portion of one railroad system can be of value only to the particular territory served, and will not be as beneficial even to this territory as if the use were extended to the whole system. The maximum benefits from container use cannot be secured until the containers are interchanged between the railroads of the country. The increase in wage rates during the last decade has caused the railroads, as well as industry in general, to adopt mechanical devices that will replace the use of man power. These wage increases make it profitable to use mechanical devices which would not be economically justified under a low wage scale. The unit container is one of these devices; it offers many savings, both in time and cost, in the handling of l.c.l. freight.

Reduction in Manhandling of Freight

From the railroad point of view, the most important benefit of the container method is the elimination of four manhandlings of the individual packages of each consignment. Under the present l.c.l. handling method, the following handlings of freight are necessary:

1. Freight is loaded from the originating warehouse to the truck;
2. Unloaded from truck to freight shed;
3. Loaded from the shed to car;
4. Unloaded from car at destination station;
5. Loaded on truck for delivery;
6. Unloaded from the truck to warehouse at destination.

With container operation, the freight is loaded into the container at origin and unloaded at destination; the four intermediate handlings are accomplished by moving the container with its load as a unit.

Profitable Railroad Handling of Traffic Now Moving Over Highways

Container use should permit the railroads to quote rates to permit their profitable handling of the tonnage moving 25 miles or more, now being trucked over the highways. Applying to l.c.l. traffic the reduced packing and crating requirements to be obtained with containers and the fact that terminal pickup and delivery costs are reduced, combined with rail line costs of $.015 per net ton-mile against $.10 on the highway, the railways can offer to the public a profitable service at rates that will encourage a "back to the rail" movement of traffic moving over twenty-five miles. The only exceptions to the above are specific movements where the public is willing to pay a premium for a more expedient delivery than this overnight service which can be offered by the railroads.

Peculiarly Adapted to Handling of Household Goods and Furniture

Container use should put back on the rails all furniture and household goods moving fifty miles or more and should eliminate the loss and damage phase of the movement of this class of freight. The container for household goods and furniture transportation is even more adaptable than the truck, inasmuch as the packing can be accomplished with as little or less cost, and the container itself, unlike the truck, is not forced by economic reasons to move back to its origin immediately after it has discharged its load. The container unit can be moved from house to house for pickup and discharge of household goods and, as in the case of merchandise, the container line-haul costs, compared with the truck, are in the ratio of 1½ to 10 per net ton-mile. It follows that the use of this means of reducing the terminal portions of the rail cost enables the railroad to handle this class of l.c.l. freight on movements of fifty miles or more cheaper than they can be handled by highway vehicles.

Reduction of Transfer Handlings

Container use reduces the amount of transfer handlings by decreasing the size of the shipping unit from a forty-ton box car to a container of 2 to 5 tons' capacity, thereby allowing more definite destination classification at the shipping point. Many consignments now moving in transfer cars can be handled direct as a unit in a container. Containers can be loaded with two or three consignments and shipped direct to destination points which do not warrant the setup of an individual car under present operations.

Increase in Car Efficiency

Container use should increase the daily mileage and the average loading on cars assigned to this service. Container cars can be loaded or unloaded in approximately 20 minutes, leaving the car free for road use, rather than tying it up at the freight shed all day as at present. Where cars are now loaded for the same destination with small amounts of freight from different points, these shipments would—under container operation—move each in a container rather than a car, and several of these containers would be loaded in one car; thereby increasing the net tons per car as well as reducing the number of cars required to move a given amount of freight.

Relief of Terminal Congestion

Container use should help relieve terminal congestion in both yards and freight sheds. Containers tend to reduce terminal congestion by increasing the amount of traffic that can be handled through a given terminal space, due to the rapidity with which cars can be loaded and unloaded. At points where cranes are provided, container traffic can be handled by the crane on team tracks, thus relieving the freight shed of the congestion ordinarily caused by this traffic. Where cranes are not available, containers can be moved directly from flat and box cars on team tracks to road trucks by the use of a simple detachable moving device.

Elimination of Theft and Damage Claims

In addition to the above, the increased car loading reduces the number of cars necessary to handle a given amount of traffic through a terminal.

Containers eliminate theft and reduce damage claims

to the vanishing point. When containers are loaded on cars so that the doors cannot be opened while in transit, pilferage is impossible. The doors can be locked at origin by the shipper and unlocked at destination by the consignee, thus affording protection to the contents while in transit through the streets, as well as while on the rails.

Damage losses are largely proportional to the number of handlings the freight receives. With a reduction of four handlings out of the minimum of six as at present, damage claims from this source can be reduced proportionately. In addition to this the smaller, more compact shipping unit—permitting, as it does, better stowing of freight—should result in less damage due to cargo shifting en route.

Faster Handling of L. C. L. Freight

From the point of view of the shipping public, an important benefit is the faster delivery of l. c. l. freight, as overnight delivery can be accomplished in every instance that such service is possible with a highway truck. Containers can speed up the delivery of l. c. l. freight by the use of organized trucking facilities at each end of the rail haul. The container can be loaded on the truck late in the afternoon, transferred to a container car—if necessary, at some point in the yard other than the freight house—and can be moved during the night to points within a radius of 150 miles, and delivery made at the destination by truck early the next morning.

Reduction in Packing and Crating

Containers largely eliminate costly packing and crating. Where containers are loaded at the origin and unloaded at their destination, the packing and crating on a great many commodities can be entirely eliminated and modified very materially on others. This both reduces the cost of crating for shipment and decreases the weight on which freight must be paid.

Reduction in Cartage Costs

Finally, containers reduce cartage costs by reducing the standing time required for loading and unloading and by increasing the average load per truck. The cartage costs at both origin and destination can be reduced by: Increasing the tonnage per truck load; reducing the time of loading and unloading by handling one unit instead of the individual packages comprising the shipment.

An analysis of the loadings of trucks of different tonnage capacities moving from a railroad's freight sheds in a large city shows average loads as follows:

2	ton	truck	594	lbs. per	trip
3	"	"	946	" "	"
4	"	"	832	" "	"
5	"	"	832	" "	"
6	"	"	916	" "	"
7	"	"	1406	" "	"

With container with loads of from 1000 to 7000 lb. each and the terminal trucking operation concentrated into the hands of one organization capacity loadings for trucks can easily be obtained; so that a 5-ton truck will move 10,000 lb. rather than 832 lb. (8.3 per cent capacity) as at present.

In addition to increasing the load, container operation reduce the waiting time of trucks by decreasing the number of trips necessary to handle the same volume of traffic.

Success or Failure Lies in Operating Methods

The success of container operation, like a good many other transportation mediums, is dependent on more than its intrinsic economic merit. This operation essentially requires co-operation between the railroad—the line-haul agency—and the truck handling terminal pick-up and delivery. Some closer working arrangements between these two agencies than usual at present must be effected to insure successful operation. As this service must by necessity be a complete service—from shipper's to consignee's door—it is believed logical that responsibility to the shipping public should rest with only one of the parties conducting the service. The railroad can remain the responsible party as at present. This would necessitate the railroads either engaging responsible truckers at all terminal points to make the pick-up and delivery of the containers, or conducting the terminal operations themselves. It has been suggested that the trucking agency should handle and be responsible to the public for the through shipment, quoting the through rate, conducting the solicitation, and generally fulfilling the duties to the public now assumed by the railroads.

Some provision must be made for ownership of the containers themselves. Ownership can be vested in either the terminal trucking company—if the trucking company is to handle all terminal operation in the country—the railroads themselves or a national container company. Under any of these plans, containers should carry a per diem charge when out of the hands of the owners.

Some Opinions on Design

The average weight of an l. c. l. shipment as determined on many railroads is between 650 and 750 lb. The results of a survey in which the average weight per consignment was 680 lb. shows that 27 per cent of the freight by weight runs between 3000 and 10,000 lb. per consignment, 36 per cent between 1000 and 3000 lb. and the balance, or 37 per cent between 1 and 1000 lb.

From the above analysis it would seem logical to make containers in two sizes: a container of about 450 cu. ft., capacity, to carry from 3000 to 10,000 lbs., which of necessity would be a flat or gondola car container; and a smaller container, for use in box cars, of about 160 cu. ft., capacity, carrying from 1000 to 5000 lb. The balance of the freight—that is, consignments running from 1 to 1000 lb.—would have to be collected and consolidated as at present, and then loaded in containers instead of box cars, if any benefit can be obtained from decreasing the transportation unit from the forty-ton box car to a container of from two to five tons capacity.

In design, containers, in the opinion of this writer,—First: Should be as simple as possible. The container should be a simple box sufficient in size and strength to handle the lading for which it is designed and to stand the handling it will be subjected to. Refinements and appurtenances can be added as their worth is proved in actual operation.

Second: Containers should lend themselves to use by the present highway and railway equipment. In order that the economic benefits from container use may be maximum, the necessity of using specially designed railroad and highway vehicles must be avoided, otherwise excessive outlays for this special equipment may in a large measure defeat the objects of container use. When their use has become established and economics from the use of specially designed vehicles proven, it will then be time to adopt special equipment.

Third: For purposes of interchange among the railroads, containers should be of a standard design. If the container is to come into general use, it is fundamental in the design that it should be interchangeable

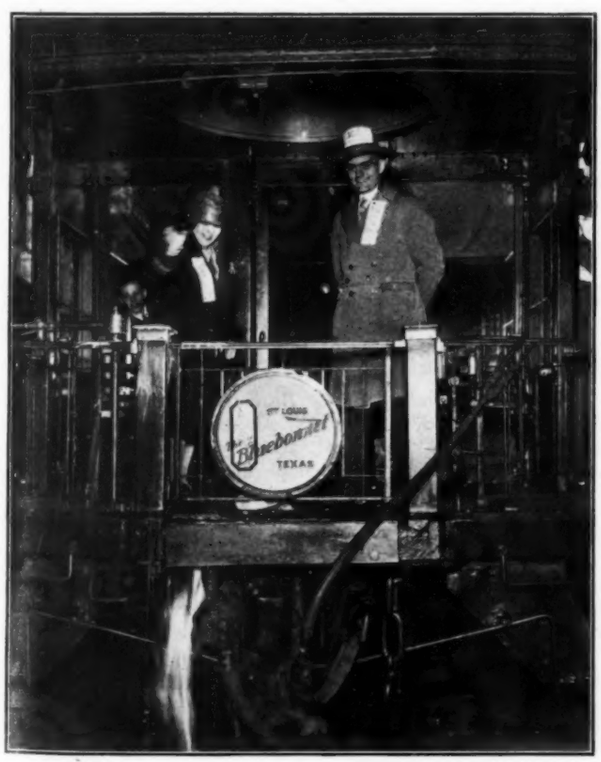
among all the railroads conducting the service. This means that containers must be designed to suit the majority of the gondola, flat and box cars now in use by the railroads throughout the country. No doubt special requirements of individual roads may necessitate special design, but it is problematical whether such containers will ever get off the rails of the road conducting the operation.

Advantage of Crane Facilities

Fourth: Provision should be made for crane handling to permit such handling where cranes are available. They could also be constructed so as to permit movement on wheels at the terminals, but without this moving mechanism when in transit on the truck or railroad car. Crane handling at terminals where the traffic is sufficient to warrant the installation is the best method from the standpoint of speed as well as economy. But the design might well be such as not to prohibit the use of containers at points where the cost of crane installation would be prohibitive for the amount of work to be performed. While wheels on containers are of benefit at the terminals and warehouses, they are likely to be a detriment if operative while the container is in transit, in that special holding devices may be required on the railway cars and the highway trucks. For this reason a transfer device of a type to keep the container "alive" when it is to be moved and "dead" while in transit is suggested.

PASSENGERS KILLED in train accidents on the railroads of the United States in the first ten months of 1927 numbered only eight; the smallest figure on record. The locomotives of these railroads in those ten months were run 1,460,268,722 miles, a slightly smaller mileage than in the same period of 1926.

* * *



Christening, in Ginger Ale, the Frisco-Katy "Bluebonnet"

Looking Backward

Fifty Years Ago

The progress of experiments with the electric light seems to afford additional proof of the importance of the discovery and of its value for practical use. In Paris it has been subjected to careful trial at the Paris, Lyons & Mediterranean railway station, where the whole of the building was illuminated like day. The light seems especially adapted to large railway buildings such as the shop of the Lake Shore & Michigan Southern at Cleveland which was recently lighted with two electric lamps, each equal to 2,000 candle lights.—*Railway Age,* February 21, 1878.

The annual reports of the Chicago, Burlington & Quincy and the Illinois Central forecast freedom in the near future from oppressive legislation in the western states. Robert Harris, president of the Burlington states: "We welcome the improved tone of public opinion in the West, in regard to the rights of railroad companies, as an indication of the growth of broader views toward interests which are intrinsically in harmony with those of the public." W. K. Ackerman, president of the Illinois Central, states: "In Iowa the indications of public sentiment toward railways are more favorable. The effects of injudicious legislation have been so severe that there is a probability of the repeal of laws which practically forbade the further investment of capital in railways." *Railway Age,* February 21, 1878.

Twenty-Five Years Ago

The Choctaw, Oklahoma & Texas, [now a part of the Rock Island] has awarded a contract for the construction of an extension from Amarillo, Tex., to Tucumcari, N. M., 112 miles, connecting the Rock Island subsidiary in Oklahoma with the Chicago, Rock Island & Gulf at the latter point.—*Railway Age,* February 20, 1903.

The New Orleans city council on February 10 passed over the mayor's veto an ordinance admitting the St. Louis & San Francisco into that city and authorizing it to construct a belt railway with ample terminals on the river front. Officers of the Frisco state that the work of extending the line from a point west of Memphis to New Orleans, 400 miles, will be pushed rapidly.—*Railway Age,* February 20, 1903.

Ten Years Ago

A rapid growth of war industries in the section between Philadelphia and Baltimore has resulted in a shortage of passenger cars on the Pennsylvania and in order to provide special trains to transport workers suburban trains operating in the neighborhood of these cities have been limited in length.—*Railway Age,* February 15, 1918.

The month of January, 1918, will be recorded in railroad annals as a record breaker for snow trouble in Chicago and its environs, not only because of the depth of snow fall and severity of the storms, but also because of the complete tieup of traffic which follows. To overcome the blockade which threatened a coal famine the railroads expended several million dollars.—*Railway Age,* February 15, 1918.

The building of the Wabash-Pittsburgh Terminal [now a part of the Pittsburgh & West Virginia], with its 60 miles of single track line, 88 bridges and 18 tunnels, has been characterized as a poor business venture by the Interstate Commerce Commission. Fifty millions in bonds were issued against a railroad which cost about $25,000,000. This line was a link in the plan of George J. Gould for a new transcontinental railroad.—*Railway Age,* February 15, 1918.

New Books

Steel Construction—384 pages. 5¼ in. by 8 in., illustrated, bound in flexible leatherette. Published by the American Institute of Steel Construction, Inc., 285 Madison Avenue, New York. Price $1.50.

The American Institute of Steel Construction has assembled in this book the results of its several years of intensive effort to standardize and improve practices in structural steel design, particularly as applied to building construction. It is primarily a structural designer's handbook, but in addition to the necessary tables of the properties of structural sections it includes the Institute's Code of Standard Practice and its Standard Specifications for Structural Steel for Buildings, as well as other specifications employed in the field of structural engineering. Considerable other information of value to the designer and detailer, not usually found in handbooks, is also included.

Profitable Application of Electric Trucks and Tractors in Industry. Published by The Society for Electrical Development, Inc., 420 Lexington Ave., New York. 90 Pages, Illustrated. Price $1.00.

This handbook published by The Society for Electrical Development in cooperation with 20 manufacturers of electrical industrial trucks and tractors, storage batteries and accessories, deals with the efficiency and economy of the electric truck and tractor in industry. It is based on a survey of 200 typical plant operations made by a member of the Survey Committee of the American Society of Mechanical Engineers and contains a special chapter for each of 16 major industries. Operating processes and the particular type of truck suited to individual jobs are described, and data given on operating costs and the direct savings effected by the use of this type of equipment.

R. A. O. A. Commodity Classification, 1928 edition, 216 pages, 6 in. by 9 in. Flexible binding. Published by the Railway Accounting Officers Association, 1216 Woodward Building, Washington, D. C. Price $1.00.

The purpose of this volume is to indicate the commodities assignable to each of the new 157 classes specified by the Interstate Commerce Commission in its recent order dealing with this subject. The material in it was prepared by one of the committees of the Railway Accounting Officers Association, with the co-operation of representatives of the commission.

The book is used by accounting officers, agents, etc., in the compilation of the commodity statistics reported by the carriers to the commission. It is also useful to traffic officers and other interested in those statistics.

The book lists about 3000 commodities and carries both an alphabetical and a classified list of the commodities. It comprises for all practical purposes a complete list of all commodities transported.

The Claim Agent and His Work. By S. R. Brittingham, assistant chief solicitor, Seaboard Air Line. 463 pages. 8½ by 5⅝ in. Bound in cloth, Price $6.00. Published by the Ronald Press Company, New York.

In this volume the author presents a comprehensive background out of which the claim agent may take innumerable suggestions and any number of bits of good advice as to the best manner in not only preparing for his work but in carrying on his duties. Mr. Brittingham takes up the legal training and knowledge necessary in the work of the claim agent, devoting chapters to the passenger, the employee under common law and under the employers' liability act, injuries to employees, workmen's compensation and release from claims and from responsibility. Beyond the legal phase of the claim agent's work he presents a study of the monetary value of life, the statistical method as applied in claim agent's work, the application of psychology to claim agents' work and the medical phases of claim agency.

One of Mr. Brittingham's most interesting chapters is that on the education of the claim agent. In speaking of this, he emphasizes the need for a cultural background and suggests a reading list to which the claim agent may add anything he chooses. The author stresses the value of familiarity with the Bible, saying "even from the barest utilitarian standpoint there is no book known to man that can approach it." And he cites an example of how responsibility for injury was fixed in biblical times and how the same principle holds today in law.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Distribution of Power to Regulate Interstate Carriers Between the Nation and the States, by George G. Reynolds. In this well written volume the conflict between federal and state authorities in the regulation and taxation of interstate carriers is traced from the adoption of the Constitution to the present time, with particular attention to the judicial interpretation of the scope of federal and state powers in the federal government. 434 p. Pub. by Columbia University Press, New York City. $6.50.

Motor Bus Operating Cost Study, January, 1928. Results of 30 companies, the mileage operated of which ranged from 10 miles to 1500 miles. 8 p. Pub. by Motor Bus Division, American Automobile Association, New York City. Apply.

The Spreading Stain, by Charles J. Finger. An exciting mystery story, with all the difficulties caused by railroad weed killer that got into the wrong hands. 245 p. Pub. by Doubleday, Doran & Co., Garden City, N. Y. $2.

Periodical Articles

Airplane Service for and by Railroads, by Edwin Fairfax Naulty. "Eight of the major systems of the country now have under consideration this new form of public service." Washington Post, February 12, 1928, Magazine Section, p. 2, 12.

A Decade of Sino-Russian Diplomacy, by Malbone W. Graham, Jr. Includes diplomatic and some other history of the Chinese Eastern Railway. The references to Chinese sources add to the bibliography of this strategic line. American Political Science Review, February 1928, p. 45-69.

Growing Uncertainty as to Business Realities: Statistics Need Reshaping, by Magnus W. Alexander. In suggesting a careful survey of the extent, accuracy, reliability and value of present statistical knowledge the author remarks that "statistical information passed out to the public is not presented for what it is worth but is accompanied .... by an increasing proportion of individual interpretation" the result of which being that current discussions of economic movements and business conditions "consists in very large part of hunches, guesses, inspirations and the like." Annalist, February 10, 1928, p. 285.

I Had a Hunch, by Arthur E. Stilwell and James R. Crowell. The builder of eight southwestern railroads relates why and how he did it and with what results. Saturday Evening Post, December 3, 1927, p. 3, December 17, 1927, p. 24, December 31, 1927, p. 24, January 14, 1928, p. 31. January 28 1928, p. 26, and February 4, 1928, p. 38.

Odds and Ends of Railroading

The Nashville, Chattanooga & St. Louis has its usual railway family too, in the Bomar brothers, of whom there are five and all of them are trainmen.

A railway society formed by a poet at Oxford University, England, "studies the railway from an aesthetic point of view." Once a year the members go for a trip on a special train on which they employ their time in eating, drinking and making speeches.

Lindbergh's Namesakes

The Union Pacific has followed the lead of the St. Louis-San Francisco in naming a station after Col. Charles A. Lindbergh. One of the new towns on the North Platte valley extension now under construction in Wyoming may be called Lindbergh, the Union Pacific magazine announces.

"All One Big Family"

John R. Cox, of Toluca, Ill., became the sole owner of the Rutland, Toluca & Northern on February 3, and took over active operation at once. The road runs between Rutland, Ill., and Greenville, 30 miles. Mr. Cox is president of the company, his son is vice-president and his wife is secretary-treasurer.

Now If We Had a Sleuth Named "Ketchum"

The application of men's names to their occupations is sometimes startling, for example, there are at least two lawyers, one of them a local attorney for a southwestern railway, named Barwise. Similarly the lack of affinity between names and occupations is sometimes interesting, as in the case of R. S. Outlaw, who is prominent in the legal department of the Atchison, Topeka & Santa Fe.

Well, Why Not?

For no apparent reason, someone recently discovered that there are 12 women station mistresses on the Scottish railways. According to report, they are highly efficient. Most of them were appointed before the amalgamation of the railways of Great Britain took place. They are uniformed, in accordance with tradition, and each of them wears proudly on her uniform collar and cap a plate bearing the legend: "Station Mistress."

"Passengers Please Show Transportation to Gateman"

"But," said the irate Passenger, "I am paying the railroad to provide me with transportation. How can I show it to the railroad? Transportation is the service the railroad renders. It is *not* the ticket or pass, in return for which the passenger can demand this service.

"If railroad men choose to use the term transportation among themselves to mean a ticket or a pass—well and good. But paying passengers ought not to have such a confusing and inaccurate term forced upon them, when the plain word *ticket* serves the purpose so well."

A Strange Phenomenon

A boy stood on the railroad track,
The train was speeding nigh,
The train got off the railroad track,
To let the boy go by.

Quite extraordinary this,
You'll say that I'm not sane,
But I'll explain. You see 'twas an
Accommodation train.

CHICAGO NEWS.

The Good Old Days

Thanks are due to Trainmaster E. D. Jones of the Soo Line at Fond du Lac, Wis., for unearthing and sending to us the following excerpt from the rules and regulations of the old Wisconsin Central, effective March 1, 1884.

"Rule 260. Offensive articles of food will not be allowed, nor passengers be allowed to dry diapers in the cars or by hanging them from the windows."

Mr. Jones also adds to the list of railway stations with literary associations two adjoining Soo Line stations, Rudyard and Kipling, the naming of which is attributed to F. D. Underwood, when he was president of that company.

The Skipper of the Cassville & Exeter

Dave Dingler, whose photograph is shown herewith, is president of the Cassville & Exeter Railroad, which connects Cassville, Mo., with all Frisco trains stopping at Exeter, 5 miles away. In addition to the presidency of the line, Mr. Dingler holds also as the photograph shows, the position of locomotive engineman, and he finds time, too, to do most of the running repairs on the one locomotive. He also has the title of general superintendent of the property.

Wide World Photos

"Oh I am a cook and a captain bold
And the mate of the Nancy brig,
And a bosun tight and a midshipmite
And the crew of the captain's gig."

NEWS of the WEEK

The Southern Pacific Gila River Bridge in Arizona

THE INTERSTATE COMMERCE COMMISSION has issued its annual order to the railroads directing them to report to it the amount of their net railway operating income and the value of their property for the year 1927, and to remit one-half of any excess over 6 per cent, in accordance with Section 15a of the interstate commerce act.

THE UNITED STATES CIRCUIT COURT OF APPEALS at Chicago has set February 24 as the date for the presentation of arguments by the railways and the employees on the validity of the wage increase granted by an arbitration board at Denver to firemen, hostlers and hostler helpers on the western railways. This appeal filed by the railroads is in protest to the action of Federal Judge Carpenter in dismissing the motion to impeach the arbitration board award.

SENATOR PITTMAN, of Nevada on February 13 submitted to the Senate a favorable report from the committee on interstate commerce on his bill, S. 656, to amend section 15a of the transportation act to relieve certain classes of short line railroads from the operation of the recapture clause. Hearings on a similar bill, introduced by Representative Newton, of Minnesota, were recently held by the House committee on interstate and foreign commerce. Hearings were held by Senate committee last session.

Motor Transport Division to Meet in Atlantic City

The Motor Transport Division of the American Railway Association will hold its next meeting in Atlantic City on June 21-23. The session will be held in the Rose room at the Hotel Traymore. The first two days of the meeting will be devoted to executive sessions at which the railroad delegates only will be admitted. On the third day, however, the automotive manufacturers and the interested public generally will be invited.

Group Insurance on the Midland Valley

The Midland Valley and the Kansas, Oklahoma & Gulf have contracted with the Prudential Insurance Company of America for group insurance for their 1600 employees; and the contract is on a basis somewhat different from that heretofore employed in most contracts of this kind. Provision is made for life insurance, combined with health and accident benefits, and the amounts for individuals depend upon their earnings. The contribution made by the employee grows less and less as his length of service increases; and, after twenty years' continuous service, he receives the benefits without any further contribution. The enrollment includes over 93 per cent of the employees.

Senate Committee to Hold Hearings on Esch Appointment

The Senate committee on interstate commerce, to which was referred the President's nomination of J. J. Esch for reappointment as a member of the Interstate Commerce Commission, decided at its meeting on February 15 to hold hearings on the question of confirmation of the appointment by the Senate, beginning on February 18. The appointment is being vigorously opposed by senators from Virginia, West Virginia, Kentucky and Tennessee, because of the commissioner's vote in the lake cargo coal rate case in which the commission ordered a reduction in rates from the Pennsylvania and Ohio coal fields. Action by the committee had been delayed at the request of Senator Goff, of West Virginia, who was ill. Meanwhile Mr. Esch is serving on the commission under a recess appointment.

A.R.E.A. Convention Program

The following is the program for the 29th annual convention of the American Railway Engineering Association, which will be held at the Palmer House, Chicago, on March 6-8:

Tuesday, March 6

President's address
Reports of secretary and treasurer
Reports of special and standing committees on
- Standardization
- Uniform General Contract Forms
- Water Service
- Ties
- Ballast
- Iron and Steel Structures
- Wooden Bridges and Trestles
- Shops and Locomotive Terminals
- Rules and Organization

Evening Session—Moving Pictures

"The Baltimore & Ohio Fair of the Iron Horse"
"The Mississippi Valley Flood of 1927"

Wednesday, March 7

- Electricity
- Signals and Interlocking
- Yards and Terminals
- Economics of Railway Operation
- Economics of Railway Location
- Economics of Railway Labor
- Track
- Rail

Annual Dinner

Thursday, March 8

- Roadway
- Masonry
- Grade Crossings
- Stresses in Railroad Track
- Wood Preservation
- Records and Accounts
- Buildings
- Co-operative Relations with Universities

Closing Business.

Commercial Stocks of Coal On January 1

Consumers' stocks of bituminous coal on January 1, 1928, amounted to 55,500,000 tons, according to a study by the Mines and Census Bureaus of the Department of Commerce. On October 1, 1927, the date of the last survey, the stocks were 61,900,000 tons. In October production was slightly less than consumption and stocks declined 600,000 tons, reaching 61,300,000 tons on November 1. Thereafter production declined sharply and in the last two months of the year the stocks decreased 5,800,000 tons. The total withdrawn from storage between October 1 and January 1 was thus 6,400,000 tons.

The reduction of stocks took place, according to the report, in spite of the fact that a slowing down of general business curtailed the demand for coal. All major classes of consumers and practically all regions of the country were consuming less coal than in the corresponding months of the year before. Exports were also low, averaging 273,000 tons a week. The total consumption plus exports was thus 10,185,000 tons a week. Production since January 1 has averaged 10,482,000 tons a week.

In addition to the coal in the hands of consumers there were 8,409,453 tons of bituminous coal and 1,037,594 tons of anthracite on the docks of Lakes Superior and Michigan on January 1. In comparison with a year ago this was an increase of 2,842,203 tons of bituminous coal and of 44,488 tons of anthracite.

The estimate of stocks is based upon signed reports from representative consumers and coal merchants scattered over all the states and drawn from all kinds of industries and uses.

The railroads have drawn upon their

stocks since October 1, according to the report, but the quantity remaining on January 1 was large even for this season of the year. The net decrease in the last quarter of 1927 was 1,781,000 tons. Total on hand January 1, 14,729,000 tons, or 1,230,000 tons above January 1, 1927, and 3,663,000 tons over January 1, 1926. The stocks on comparable dates in recent years are shown below:

January 1, 1919	13,626,000
January 1, 1921	9,200,000
January 1, 1922	15,458,000
January 1, 1923	6,757,000
January 1, 1924	19,368,000
January 1, 1925	12,156,000
January 1, 1926	11,066,000
January 1, 1927	13,499,000
April 1, 1927	22,806,000
October 1, 1927	16,510,000
November 1, 1927	15,839,000
January 1, 1928	14,729,000

The railroad coal stocks on January 1, according to the report, amounted to 41 days' supply, as compared with 37 days' supply on hand January 1, 1927, 30 days' on January 1, 1926, 46 days' on January 1, 1925, and 42 days' on January 1, 1924.

Alaska Railroad

The United States Senate spent a large part of its session on February 8 in debate on a proposal of Senator Howell to amend the Interior Department appropriation bill, which had already been passed, to provide that none of the appropriation for the Alaska Railroad should be used for the operation of the 39-mile narrow-gage branch extending northeast from Fairbanks, which he said was being operated for the benefit of the United States Smelting, Refining & Mining Company. He contended that this branch was being operated at a loss and that it should be leased to the mining company for operation. Senator Willis, of Ohio, said that the Fairbanks Exploration Company, said to be a subsidiary of that to which Senator Howell referred, had just completed a $9,000,000 investment in that region and that the railroad expected a large increase in traffic from it.

Senator Howell, after the amendment had been defeated, proposed another providing that none of the $400,000 carried in the bill for capital expenditures be expended on the line between Seward and Anchorage, on the ground that this also was an unprofitable section of the line. It was also defeated.

Senator Howell said the government has expended some $60,000,000 on the road and that there are only 8,000 people within the territory covering 150 miles on each side of it, of which 3,000 are there merely because of the railroad. Many of the senators said that the government had made an unprofitable venture in the railroad but that they were opposed to destroying its opportunities for developing traffic by lopping off parts of it now. The bill provides for $900,000 to cover the expected deficit and $400,000 for capital expenditures.

Investigation of Conditions in Coal Fields Proposed

The Senate committee on interstate commerce on February 15 voted to report favorably on the resolution introduced by Senator Johnson, of California, calling for an investigation by the committee of the situation in the bituminous coal fields, but with an amendment to provide that the investigation may be conducted by a sub-committee. An amendment proposed by Senator Reed, of Pennsylvania, to broaden the scope of the resolution to include an inquiry into the freight rates on coal, which would have brought in the lake cargo coal rate case, was rejected by the committee, with a recommendation that it be considered, if desired, as a separate resolution.

A preliminary hearing was held by the committee on February 10 at which Philip Murray, vice-president of the United Mine Workers, testified that the railroads had forced the coal operators to repudiate the Jacksonville wage agreement in order to force down the price of coal to that in the non-union fields. Senator Johnson had also stated in the Senate that it had been charged that "the railroad companies have exercised their great power to coerce others into the repudiation and violation of contracts in the making of which the government itself had participated; that these railroad companies have conspired to destroy a labor union; that in some cases they have refused cars to transport coal mined by union labor; that they have hammered down the price of coal, while basing their rate structure upon a much higher price; that, in fact, the horrible conditions had their inception in a conspiracy between railroad companies and coal operators."

Government Would Refer Northern Pacific Land Grant Controversy to Courts

In response to a joint resolution of Congress passed in the closing days of the last session, the Attorney General of the United States on February 9 sent to the special joint committee of Congress appointed to investigate a controversy relating to lands granted to the Northern Pacific a momorandum suggesting that Congress declare forfeited the title to some 6,000,000 acres in dispute, so that the way may be paved for a judicial determination of the whole question.

The railroad company is claiming a deficiency as the result of various patents and withdrawals at different times since 1864, whereas the Department of Agriculture has claimed that certain of the lands involved are included in forest reserves. Extensive hearings on the subject were held before the special joint committee, after which the Department of Justice was called on to render an opinion.

The memorandum of the Attorney General says that the United States, by reason of breach on the part of the company of conditions contained in the grants of 1864 and 1870, has the right to declare the grants forfeited, thereby revesting in the United States the legal title to granted lands remaining in the ownership of the company, but that it is not certain whether the executive branch of the government can make necessary provisions for an equitable adjustment. However, if Congress shall declare its determination that the grants be forfeited and the executive branch goes into court to secure an adjustment, "all questions of authority will be eliminated and the way cleared for a judicial determination."

Employee Education—Prize Paper

The Canadian Railway Club (C. R. Crook, secretary, 129 Charron Street, Montreal) announces that the club offers a prize for the best paper on employee education, competition being open to "all members of the club and employees of any Transportation Company in Canada holding positions under that of general foreman, or chief clerk." Competitors are expected to write on the value of education to the employee and to the employer; and, in general, how such a scheme of education can be carried out to the best advantage. Papers should not be over 4000 words in length. The writer's name must be sent in on a slip separate from the paper itself and the essay must be in the hands of the secretary not later than May 1. The winning paper is to be read by the author at a regular meeting of the club. The prize is a course at the International Correspondence School, Scranton, Pa., or, at the option of the recipient, the sum of $45 in cash.

C. P. R. Takes Over Alberta Government Line

Sale of the Lacombe & Northwestern to the Canadian Pacific has been announced at Edmonton, Alta., by Premier Brownlee. After considerable negotiations President Beatty of the Canadian Pacific accepted the offer of the Alberta government for the line, and agreed to indemnify the province against future liability on outstanding 5 per cent bonds for $278,700, and in addition to pay the province $1,500,000 in cash, and to construct an extension of the road to a point at or near Telfordville, the extension to be completed within three years. The length of the proposed extension is 20 miles. This extension will provide that no part of the district is more than 10 to 14 miles from the railroad.

The present terminus of the Lacombe & Northwestern is at Breton. The Premier intimated that the deal with the Canadian Pacific means a saving of $175,000 a year to the province. The physical valuation of the line has been placed at $2,100,000 by John Gallaghan, Deputy Minister of Railways.

Thornton Discusses C. N. R. Operations

Sir Henry Thornton, president of the Canadian National addressing the Canadian Club in Toronto this week stated that the net earnings of the National System for 1927 were $42,100,000.

In making these figures public, Sir Henry pointed out that the National Railways in common with other carriers, had faced during 1927 increased operating costs; that the wage increases alone amounted to $6,000,000 a year and that the reduced freight rates, chiefly in grain, cost the system a loss in revenue of $1,500,000 per annum.

In commenting upon the wage increases, Sir Henry paid a whole-hearted tribute to the fine work done by every member of the Canadian National organization. "I can assure you," he said, "that I have no complaint to make as to these increases, nor do I think have the people of Canada. There are no more loyal, earnest and enthusiastic workers than those who serve the National Systems, and when it is remembered that the net earnings of the railways have been increased through the efforts of the Canadian National staff from $3,000,000 in 1922 to more than $42,000,000 in 1927, not only was the additional remuneration well-earned, but not to give some recognition for the excellent work done would have been destructive to the fine spirit which characterizes the organization."

Sir Henry further pointed out that during the year there had been not only a reduction in gross revenues, but large expenditures incurred in maintenance and equipment. "In the early days following the amalgamation, we had to proceed cautiously," Sir Henry added, "until the organization found its feet, and as a result many improvements had to be made to give the service which the people of Canada demanded." Sir Henry drew attention to the fact that the freight rates in Canada were on the average 8½ per cent lower than those prevailing in the United States, and also lower than in any country in the world. "When it is considered that traffic in the Dominion must be moved over great distances," Sir Henry said, "lower freight rates can be justified but had they been on an average with the United States, the net earnings of the C. N. R. this year would have been increased by $22,000,000."

A statement table in the House of Commons shows the debt of the Canadian National Railways on December 31, 1926, as $2,161,046,866. This total is made up as follows: funded debt, unmatured, of $935,383,109; Dominion of Canada account, $594,300,369; unpaid interest, $193,951,356; and appropriations account of the Canadian Government Railways of $437,412,032.

"All government loans to the railways are treated in the public accounts as non-active assets, and no deduction is made from the Dominion debt in respect thereof," the statement declares.

Southern Pacific Ordered to Recognize Clerks' Union

Three officers of the Texas and Louisiana lines of the Southern Pacific were given the choice of restoring the Brotherhood of Railway Clerks temporarily to its former position on the lines of that railroad or of imprisonment in the Harris County (Tex.) jail by Federal Judge J. C. Hutcheson when they came before him for sentence at Houston, Tex., on February 10 in a civil contempt case. The Southern Pacific officers involved in the case are H. M. Lull, executive vice-president, G. S. Waid, vicepresident and general manager, and J. G. Torian, assistant to the vice-president and general manager. W. R. Mann, assistant superintendent, was exonerated of the charges when it was shown that he acted entirely upon orders from his superior officers.

Judge Hutcheson allowed the railway 10 days in which to conform to his order, which involves the abolition of the Association of Clerical Employees, organized by the railroad, as well as recognition of the Brotherhood. He pointed out that his decree was made in the interests of the clerks as employees and not as members of the Brotherhood. For that reason the judge indicated that when the order had been complied with he would conduct a secret ballot under court supervision, allowing each clerk to express his preference for either the company association or the labor union as his official labor representative. If the result is favorable to the company association the court would then allow the reorganization of the Association of Clerical Employees.

Three discharged employees, who were officers of the Brotherhood, were restored to their former positions by the court order with no loss of salaries or seniority rights and the railroad was ordered to give recognition to two other union officers. Attorneys' fees and court costs incurred by the union, amounting to $2,000, must be paid by the railway. The road was also directed to cease the practice of allowing officers of the Association to remain on company time and company pay unless engaged in active railroad service, if the same privileges are not accorded to Brotherhood officers.

Judge Hutcheson handed down a decision on January 28 in which he held officers of the Southern Pacific in contempt of court for alleged violation of an injunction issued on August 3, 1927, forbidding them to interfere with their clerical employees' union activities. A wage dispute involved in the proceedings was set aside until the settlement of the contempt case. Southern Pacific officers were denied the privilege of answering the court charges through counsel.

* * *

A First Class Compartment in the L. M. S. "Royal Scot" Limited

Traffic

The Interstate Commerce Commission on February 15 made public a report proposed by Examiner Charles W. Berry recommending that the commission find that the divisions accorded the originating roads of joint rates on prepared sizes of bituminous coal from Virginia, West Virginia and Kentucky to destinations in Trunk Line and New England territories are unreasonably low and should be increased to amounts stated in the report.

Southeastern Roads Ask Modification of Sugar Rates

The southeastern railroads have petitioned the Interstate Commerce Commission for a postponement for 45 days of the effective date of its recent order in the sontheastern sugar investigation case, in which rates were prescribed on sugar from north Atlantic ports to destinations in southern territory. The roads are anxious to revise their rates at the earliest practicable moment, but they are dissatisfied because the rates prescribed from Baltimore, Philadelphia, New York, Boston and other eastern points are on a lower level than the rates prescribed in the same proceeding for application intraterritorially between points in southern territory. "If rates on commodities from other territories into the South are to be made on a lower basis than intraterritorial rates in southern territory," the petition says, "and if the southern manufacturer or producer must ship into the densely populated territory north of the Ohio and Potomac rivers on a basis of rates much higher than the northern producer or manufacturer enjoys in that territory, then the South cannot grow and develop as it should and as it will under fair and proper rate relationships."

California Grape Car Plan

The Interstate Commerce Commission on February 13 made public a report and order on the complaint filed by certain dealers in and growers and shippers of grapes from California which had attacked the California Grape Car Plan, as operated in 1926 and 1927, by co-operation between the railroads and the shippers, to govern the distribution of refrigerator cars for grape loading in time of car shortage. The commission follows very closely the recommendations made by John L. Rogers, special examiner, last June, and expresses general approval of the plan, saying that its rules "represent the result of an earnest and wholehearted effort on the part of carriers and private car lines with the full co-operation of a large majority of shippers and growers, and mark a distinct advance over what has prevailed in the past."

The commission finds, however, that the part of the plan under which public advisory committees were selected for the different districts to advise with the joint railroad representatives in determining

the car requirements of various shippers, is unlawful and should be discontinued. "We can see no good reason," the report says, "why the carriers' representatives cannot do all that is necessary in the consideration of the requests or estimates of shippers for cars, without the assistance or advice of individuals who in most if not all instances are personally interested in the grape deal."

The commission finds that the allegation that defendant roads neglected to make provision for furnishing an adequate number of cars has not been sustained; that no undue preference is found to exist by reason of the bond requirement, and that defendants' rules and practices are not unreasonable, except that part of the plan relating to public advisory committees.

Canadian Minister on Maritime Rate Case

Discussing Maritime freight rate legislation, international joint rates and the Hudson Bay Railway Charles A. Dunning, Minister of railways and Canals, at Ottowa spoke in Parliament last week in reply to a number of charges made against the government by Maritime Conservative members. On these railway questions Mr. Dunning said in part:

"It is my duty to watch the interests of transportation in his country, and if the state for state reasons, desires to fix a rate for the carriage of goods which is below a fair and reasonable level from the standpoint of the transportation companies, and in the view of the railway commission, then the state should not ask these companies to bear the loss but should vote it in parliament on the same principle as is applied in the Maritime Freight Rates Act. I say this in the interests of the people's railway. If we are to expect esprit de corps, that devotion to duty, that pride in the institution on the part of is officers and men, without which success is impossible, then we must hold up before these officers and employees an incentive to have their institution make both ends meet. But we cannot do that if we force the railways to bear an expenditure below what is declared to be a fair and reasonable rate.

"After all, what is the real test as to whether or not the people of the maritime provinces have received the benefits which this parliament contemplated they should derive from the act? The real test is whether or not they are having their traffic moved today, under the act, at 20 per cent less than it was moved a year ago; and I venture the statement that the figures given by the Postmaster General (Mr. Veniot) prove—it will be proved progressively as time goes on—that the freight bills of the people of the maritime provinces with respect to traffic movements under the act will be shown to be 20 per cent less than they would have been had the Act not been passed.

"I do not know how many minutes I have left, but I want to say a word or two about this 'gateway question. What my honorable friends are contending for is that when I ship a carload of grain from the Canadian National station I should have the right to say to that company: You must turn this car over to the Canadian Pacific railway at the interchange point twenty miles away and let that railway haul the car to Fort William or Port Arthur. And what is the history of them in Nova Scotia and New Brunswick? They came about in a perfectly understandable manner. In the days when the Intercolonial railway did not extend beyond Levis, in the days when it was not a part of a national railway system, in the days when it was necessary for a shipper to get off the Intercolonial line and on to the Canadian Pacific somewhere, they were allowed, for convenience sake, to interchange at St. John and Ste. Rosalie. Now the Intercolonial is part of a great national railway system capable of taking freight from the shipper to any large center anywhere in Canada. Nowhere on the North American continent does the principle prevail that a shipper can direct a railway company to hand over a carload of freight to another to haul to a destination which the first conveniently serves."

A Union Pacific Advertisement

At the passenger station of the Union Pacific System at Pasadena, Cal., the company advertises its Death Valley tours as follows:

"The Union Pacific operates two-day all-expense tours into and through wonderful Death Valley * * * * with through Pullmans, direct to Death Valley Junction, and Union Pacific comfortable auto-buses for the two-day tour," and so on.

This placard attached to the wagon at the right, in the picture, has the advantage of the novel background shown. The wagons are the original 20-mule-team type which has been made well-known all over the country by borax advertisers.

Enticing Passengers into Death Valley

Foreign

Swiss Railroads Enjoy Good Year

The year 1927 was an exceptionally favorable one for the Swiss Federal Railroads, and net operating receipts, which amounted to about $78,000,000, as compared with about $73,200,000 in 1926 were the largest in the history of the enterprise, according to a report to the Department of Commerce from Assistant Trade Commissioner Kenneth M. Hill. Operating expenses decreased from $50,600,000 in 1926 to $50,000,000 in 1927.

Passenger receipts amounted to approximately $18,500,000 and show an increase of $400,000 over 1925, the highest previous year, and $1,000,000 over 1926. This increase is due largely to increased tourist traffic, the number of passengers carried reaching approximately 109,000,000 or the largest number ever carried on the Swiss lines. On the other hand, the average receipts per passenger appears to be lower than for several years preceding, due, probably, to a more extensive use of the round trip and season ticket by tourists. Freight receipts show an increase of about 7 per cent over 1926. The indicated total of $46,000,000 from this source is still somewhat short of record figures, however. The rapidly increasing use of the motor truck is making competition much keener and it would not be surprising if the federal government followed the lead of the Canton of Berne in slowing up this competition by means of legislation, according to Mr. Hill's report.

Development of Railways in Manchuria

While the rest of China is passing through a period of economic disorder, the development of Manchuria is going ahead at an unprecedented pace, according to C. J. Moser of the Department of Commerce, in a study of Manchuria's railways. Thirty years ago, it is pointed out, Manchuria had no railways and its population was less than 2,000,000. Today its railways total nearly 4,000 miles—about as much as the whole of the rest of China—and the population numbers over 27,000,000. Railway development has brought into Manchuria probably the greatest colonization movement that has ever taken place in history, in an area of similar size and in a similar length of time. In one month, March, of the current year, approximately 200,000 Chinese immigrants passed through the port of Dairen. Hitherto the movement has averaged around 400,000 immigrants per year.

GREAT NORTHERN.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction and operation of a 75-mile branch line from a point near Saco, Mont., to a point about 12 miles west of Turner, Mont.

Equipment and Supplies

Locomotives

THE DONNER STEEL COMPANY, Buffalo, N. Y., has placed an order for 1 sixty-ton oil electric locomotive to be built by the Ingersoll Rand, General Electric, and American Locomotive companies.

THE AMERICAN ROLLING MILL COMPANY has placed an order for 1 one hundred-ton oil electric locomotive to be built by the Ingersoll Rand, General Electric, and American Locomotive Companies.

Freight Cars

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE is inquiring for 200 box cars

THE SINCLAIR REFINING COMPANY is inquiring for 5 coke cars.

BUTLER BROTHERS, Ironton, Minn., has ordered 8 twenty-cu. yd. air dump lift door type cars, from the Koppel Industrial Car & Equipment Company.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered 500 center constructions for cars, from the Tennessee Coal, Iron & Railroad Company.

THE CHICAGO GREAT WESTERN has ordered 50 stock car underframes and 5 caboose car underframes from the Bradford Corporation. Inquiry for this equipment reported in the *Railway Age* of January 21.

THE NORFOLK & WESTERN has given an order to the Ralston Steel Car Company for rebuilding 1000 hopper coal cars of 57½ tons capacity. Inquiry for bids on this work was reported in the *Railway Age* of January 28.

Passenger Cars

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 11 gas electric rail motor cars.

THE CENTRAL RAILWAY OF BRAZIL has ordered 12 passenger train cars from the American Car & Foundry Company.

THE DELAWARE & HUDSON has ordered 3 all steel combination mail and baggage cars from the American Car & Foundry Company. Inquiry for 8 cars was reported in the *Railway Age* of December 17.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE has ordered eight combination baggage and smoking cars from the Pullman Car & Manufacturing Corporation.

Machinery and Tools

THE NEW YORK CENTRAL is inquiring for one 25-ton and one 40-ton locomotive crane.

THE READING is inquiring for two 225-ton electric overhead cranes designed to handle locomotives and one 50-ton overhead crane.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for the following machine tools:

1—84-in. guide bar grinder
2—90-in. driving wheel lathes
1—1,500-lb. steam hammer
1—8-in. cold saw
1—24-in. upright drill
1—14-in. x 6-ft. portable lathe
1—30-in. x 16-ft. heavy duty engine lathe
1—90-in. locomotive journal truing machine
1—20-in. x 12-ft. heavy duty engine lathe
1—20-in. x 2½-in. single wet tool grinder
1—20-in. x 8-ft. heavy duty lathe
1—24-in. heavy duty shaper
2—horizontal boring machines
1—universal milling machine
1—brass turret lathe
1—54-in. guard wheel tire turning lathe
1—90-in. driving wheel lathe
2—18-in. x 10-ft. engine lathes
1—36-in. x 10-ft. engine lathe
1—3½-ft. radial drill
1—4½-ft. radial drill
1—20-in. drill press
1—Micro internal grinder
1—2-in. double head bolt cutter
1—75-ton hydraulic press
1—1¼-in. bolt cutter
1—50-ton hydraulic press
1—10-in. x 36-in. grinder
1—39-in. crank planer

Signaling

THE CHICAGO & ALTON has ordered from the General Railway Signal Company a mechanical interlocking for Delavan, Ill.; 24 working levers.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company electro-mechanical interlocking for BH tower, Crafton, Pa., and for FS tower, Corliss, Pa.

THE DENVER & RIO GRANDE WESTERN has contracted with the General Railway Signal Company to install automatic block signals between Canon City, Colo., and Tennessee Pass, 123 miles. This road has announced plans for the installation of automatic block signals this year between Tennessee Pass and Minturn, 21 miles; also between Maxwell, Utah and Colton, 60 miles.

Miscellaneous

THE NEW YORK CENTRAL has let to the Dravo Contracting Company, Pittsburgh, Pa., a contract for the construction of four steel car floats each 270 ft. long and 38 ft. wide; cost about $400,000.

U.S.S.R. Buys 30 Locomotives

The Russian Imperial Railway Commission has ordered 30 industrial locomotives from the George D. Whitcomb Company, Rochelle, Ill. The locomotives purchased are to be used in building 1,000 miles of new railway from a junction with the present trans-Siberian railway, south through Turkestan to a point near Afghanistan. The locomotives are all of the internal combustion type, powered with heavy duty Climax engines. They will be fitted to burn kerosene and will develop 122 hp. at a speed of 1,000 revolutions per minute.

The order includes twenty 12-ton and ten 18-ton locomotives.

Supply Trade

Charles M. Hoffman, assistant to vice-president of the **Dearborn Chemical Company,** Chicago, has been elected vice-president.

George T. Johnson of the manufacturing, engineering and sales departments of the **Buckeye Steel Castings Company,** has been elected third vice-president in charge of sales and engineering.

Leeds, Tozzer & Co., Inc., 75 West street, New York City, has been appointed special sales representative for the **Thew Shovel Company,** Lorain, Ohio, and the **Universal Crane Company,** Elyria, Ohio, for the eastern railways of the United States.

Baldwin Locomotive Works

The annual report of the Baldwin Locomotive Works for the year 1927 shows net profit after allowance for taxes of $2,442,200, equivalent after preferred dividends to $5.01 per share on the common stock. This compared with net income in 1926 of $5,883,907 or $22.41 a share.

The annual report shows that the sales for 1927 totaled $32,901,143 as compared with $47,891,669 in 1926 and $27,876,064 in 1925.

The company's dividend requirements total $2,800,000 which amount has been paid from surplus for the past four years. In only one of these four years, 1926, were the net profits after reserves higher than the dividends.

The income statement shows that there was charged off in 1927 $1,000,000 for depreciation. The balance sheet as of the end of the year shows that a reserve has been set aside for the 1928 dividend requirements. The surplus as of December 31, 1927, stood at $15,852,059 as compared with $18,847,740 at the end of 1926.

The income statement follows with comparisons for 1926:—

	1927	1926
Sales	$32,901,143	$47,891,669
Cost	30,853,796	44,080,416
Manufacturing Profit	2,047,347	3,811,253
Other Income Interest, etc.	2,337,315	3,857,661
Gross Income	4,384,662	
Gross Profit		7,668,914
Deduct Accrued Interest, etc.	679,215	1,176,492
Profit	3,705,447	6,492,422
Less Depreciation	1,000,000	.....
Taxes	225,000	455,000
Deferred Profits	38,247	153,515
	1,263,247	608,515
Net Profit	$2,442,200	$5,883,907

E. T. Wade, with headquarters at Richmond, Va., representing the **Franklin Railway Oil Company,** Franklin, Pa., in addition to having been formerly elected to its board of directors, has now been elected vice-president. Mr. Wade was born in Richmond, he began his business career with the Chesapeake & Ohio and some years ago left that service to enter the railroad department of

the Johns-Manville Company and was located in Atlanta, Ga. In 1922 Mr. Wade resigned from the Johns-Manville Company and returned to Richmond to enter the railway supply business, representing railway manufacturing concerns in the east and middle west. His appointment as vice-president of the Franklin Railway Oil Company will have no effect upon his connections with other firms that he represents. His headquarters will remain the same.

Lima Locomotive Works, Inc.

The annual report of the Lima Locomotive Works, Inc., for the year 1927 shows a net loss of $191,341 as compared with a profit after allowance for taxes, in 1926, of $1,704,828.

The gross sales for the year amounted to $6,218,760 and other income, $287,367, making the gross income $6,506,127, compared with $18,064,507 for the year 1926. This marked a shrinkage of $11,558,381, or 64 per cent.

There was included in the year's operating cost, depreciation on plant and property amounting to $415,244, compared with $409,967 for the year 1926 and with $419,222 for the year 1925.

The company has no bonded debt and but one class of stock. Quarterly dividends were paid from surplus during the year on the outstanding 211,057 shares of common stock without par value, at the annual rate of $4.00 per share, amounting to $844,228. The surplus at the beginning of the year was $3,843,672. The surplus at the end of the year was $2,914,772. The unfilled orders on the books at the close of the year amounted to $3,580,727.

Selected items from the income statement follow:

INCOME ACCOUNT

	1927	1926
Sales	$6,218,760	$17,899,074
Less: Manufacturing Cost (before depreciation), Administrative and other expenses	6,282,223	15,378,462
Depreciation	415,244	409,967
	$6,697,467	$15,788,429
Operating: loss	478,708	
profit		2,110,644
Other income	$ 287,367	165,434
Profit		$ 2,276,078
Less: Reserve for Fed'l income taxes		221,250
Reserve for contingencies		350,000
		$ 571,250
Net loss	$ 191,341	
Net income		$ 1,704,828

R. R. Vinnedge has been appointed Manager of Railway Sales of the **Pennzoil Company,** of Oil City, Pa., with headquarters in the Graybar building, New York. After graduating from Purdue University in mechanical engineering, Mr. Vinnedge entered the employ of the Atlas Engine Works of Indianapolis and later was placed in charge of its Cincinnati district office. He then became associated with the Browning Crane Company of Cleveland in sales work in Eastern territory, in Canada and in France. In 1917 he became manager of the New England territory for Detroit Steel Products Company. From 1919 to 1922 he was with the American International Steel Corporation of New York as manager of European and Far Eastern Sales. In 1922 he went to the Galena Signal Oil Company in steam railroad sales work with headquarters at New York, from the service of which company he resigned January 15.

E. C. Brandt, works manager of the Homewood works of the **Westinghouse Electric & Manufacturing Company,** and **F. J. Shiring,** superintendent of motor apparatus, have been appointed assistant works managers at the East Pittsburgh works. **J. E. Webster,** engineer of works, East Pittsburgh, has been appointed chief plant engineer. **A. E. Kaiser,** assistant manager of the East Pittsburgh works, has been appointed director of production for all works; **S. C. Hoey,** superintendent of the manufacturing engineering department has been appointed works manager of the Homewood renewal parts works.

General Railway Signal Company Report

The annual report of the General Railway Signal Company issued this week shows that in the year 1927 the company had net income after allowance for taxes of $2,940,578 which was equivalent after preferred dividends to $7.78 per share of common stock. Net income in 1926 was $3,927,796 or $11.61 per share on the common stock then outstanding.

Selected items from the income statement follow:

	1927	1926
Gross operating income	$4,983,812	$5,647,083
Selling, administrative and general expenses	1,131,464	1,092,807
	3,852,348	4,554,275
Deduct:		
Interest, amortization, bad debts and miscellaneous charges	423,013	218,403
Less interest received, discount and miscellaneous income	96,244	66,924
	326,769	151,479
Net income before taxes	3,525,578	4,402,796
Deduct federal and state taxes (estimated)	585,000	475,000
Net income	2,940,578	3,927,796

President W. W. Salmon in his remarks to stockholders treats of the year's business as follows:

From its organization in 1904 until 1924, your company's business with railways consisted almost wholly of the furnishing of automatic electric block and interlocking systems and apparatus. In 1924 automatic train control first came to constitute an important part of your company's operations. In 1926 your company made the first commercial installations under the Hannauer car retarder patents. In August, 1927, there was placed in service on the New York Central Lines, between Berwick and Stanley, Ohio, the first installation of a patented system of switch and signal operation and train control developed by your company's engineers during the past few years.

During 1927 your company secured orders from 14 railways for 26 interlocking plants, having a total of 980 levers, and for new automatic block signal installations on more than 1,600 miles of line, requiring 5,174 signals. The car retarder installations first made in 1926 having proven their utility, orders were received in 1927 for car retarders for the Mechanicsville, N. Y., yards of the Boston & Maine; for the Selkirk yards of the New York Central and for the Fort Worth, Texas, yards of the Texas & Pacific. Improvements made by your company's engineers in the design and construction of car retarders since the first installation in 1926, have effected such substantial reductions in their cost as to greatly enlarge the field for their economical employment. In 1926, your company received orders for the equipment of 32 engine divisions with automatic train control, orders for 24 of these divisional installations having been placed by railways in compliance with requirements of the Interstate Commerce Commission and orders for eight of them having been placed voluntarily. In 1927, your company received orders for the equipment of 22 divisions—three of which were placed to meet requirements of the Interstate Commerce Commission, and 19 of which were placed voluntarily. Your officers know of no order voluntarily placed by any railway for a commercial divisional train control installation aside from the 27 divisional equipments ordered of your company, as above noted.

At this period a year ago, the value of unfilled orders on hand was the largest in your company's history. In the first half of 1927 orders received were in excess of normal; but substantially coincident with reduction of railway car loadings and earnings, in the third quarter of 1927, the volume of signaling orders received by your company showed, and has continued to show a great decrease. Of the totality of dollar value of railway orders received by your company in 1927, 36.3 per cent were placed in the first quarter, 29.2 per cent in the second, 18.0 per cent in the third, and 16.5 per cent in the fourth. Thus far in January of 1928, there has been no improvement over the average of the fourth quarter of 1927. In consequence of this marked reduction in volume of business booked since the middle of 1927, the value of unfinished orders in hand as of this date is less than half of that a year ago and your company's monthly output is now and will continue to be substantially below that of 1926 and 1927 until a marked improvement shall take place in respect of volume of business let by the railways. Pending such revival of business as may necessitate the use of all or some part of the funds realized from the sale in 1927 of 32,500 shares of your company's common stock and 2,575 shares of its preferred stock—these funds have been invested in interest and dividend bearing securities of ready marketability, the yield of which will meet the present dividend requirements of the additional preferred and common stock sold in 1927.

Obituary

Thomas Henry Hopkirk, eastern sales manager of the **American Steel Foundries, New** York, died on February 14 at his residence in that city, after an illness of several months duration. Mr. Hopkirk was 58 years old and had been

Thomas Henry Hopkirk

associated with the American Steel Foundries for more than 20 years. Prior to that time he had worked in various capacities for the Erie. Mr. Hopkirk was born in Toronto, Ontario.

Construction

CANE BELT.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension from a connection with its present line in Wharton county, Tex., to a point on the Gulf, Colorado & Santa Fe near Thompsons, Tex., 35 miles, to be leased to the G. C. & S. F. for operation.

CHICAGO & NORTH WESTERN.—A contract has been let to Peppard and Burrill, Minneapolis, Minn., for the construction of the substructure of a 55-ft. steel bridge spanning a highway at Baraboo, Wis. This company plans the construction of a brick freight station and accompanying track facilities at Appleton, Wis. The main freight station will have dimensions of 40 ft. by 218 ft., with a two-story office building at one end which will have outside dimensions of 40 ft. by 40 ft.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—Congress has adopted an amendment to the original act of February 16, 1924, authorizing this company to construct a bridge over the Mississippi river at St. Paul, Minn., which extends the time within which work must be started to February 16, 1929. By the same amendment the time within which the construction must be completed has been extended to February 16, 1931. This bridge, which it is estimated will require a total expenditure of about $3,000,000, will be located on the Ford plant line of the Milwaukee and will be double track width to provide for future use as a through line. A contract has been let by this company to Henry Danischefsky, Milwaukee, Wis., for the construction of a brick freight station with concrete foundations in an outlying district at North avenue, Milwaukee.

GULF, COLORADO & SANTA FE.—This company contemplates the construction of a freight station at San Angelo, Tex., for which it is planned to invite bids within about six weeks. It is also planned to construct a five-stall steel and concrete roundhouse at San Angelo.

LOUISVILLE & JEFFERSONVILLE BRIDGE & RAILROAD COMPANY. — Tentative plans have been filed with the United States district engineer at Louisville, Ky., for the reconstruction of steel superstructure and masonry other than in river piers of the bridge over the Ohio river between Louisville and Jeffersonville, Ind., at a cost of between $3,250,000 and $3,500,000. This bridge and approaches are operated jointly by the Cleveland, Cincinnati, Chicago & St. Louis and the Chesapeake & Ohio.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—A. E. Wallace, vice-president and general manager, has announced that the budget of this company for 1928 provides for the expenditure of $800,000 for the enlargement of the Schiller Park (Ill.) yard and for the expenditure of $200,000 for the construction of new passing and storage tracks and extensions to existing passing tracks between Stevens Point, Wis., and Chicago.

MISSOURI PACIFIC.—A contract for the construction of 16.6 miles of new double track on the St. Louis-Kansas City line, between Allenton, Mo., and Labaddie, involving abandonment of the old line between those two points, has been awarded to J. A. Kreis & Sons, Knoxville, Tenn. The total cost of the project is estimated at $4,885,000.

PRINCE GEORGE & CHESTERFIELD.—This company, in process of organization under Virginia laws, has applied to the Interstate Commerce Commission for authority to build a line from a point near Chester, Va., to Hopewell, 14 miles, to be operated by the Seaboard Air Line, which proposes to acquire its stock and lease the line.

SACRAMENTO NORTHERN.—The Interstate Commerce Commission has authorized the Sacramento Northern to construct a line of railroad in Yolo and Solano counties, California, from a connection with the railroad of the San Francisco-Sacramento at Lisbon in a southerly direction to a point at or near the southern line of Reclamation District No. 999, a distance of approximately 13 miles; and also granted the applicant authority to operate under trackage rights over the railroad of the San Francisco-Sacramento between West Sacramento and Lisbon, approximately 8 miles, in Yolo county. The estimate of construction cost is $738,709.

ST. LOUIS SOUTHWESTERN.—This company plans the expenditure during 1928 of $2,900,000 for the reconstruction of 162 miles of its lines in Texas. Included in this project is the revision of grades and alignment of the line between Mt. Pleasant, Tex., and Tyler, 67 miles, at a cost of $1,900,000 and of the line between Sulphur Springs, Tex., and Dallas, 95 miles, at a cost of about $1,000,000.

SOUTHERN PACIFIC.—(Pacific Lines).—A contract for the construction of a machine shop at Eugene, Ore., has been awarded to H. E. Wilder, Eugene. This shop, which is to be constructed of steel with corrugated metal siding, will have outside dimensions of 72 ft. by 222 ft. The cost of the building, including a 10-ton traveling crane, and other facilities, is estimated to be $242,000. Plans have been prepared for the construction at Fresno, Cal., of a classification yard which will have an estimated ultimate cost of about $2,000,000 The first unit of the yard, consisting of 23 miles of tracks, an oil pump of 36,000 gal. capacity, with necessary oil-unloading facilities and air lift for automatic fuel oil servicing, a track scale of 150 tons capacity, two 65,000 gal. steel water tanks, a store building and telegraph and yard offices, will be constructed during 1928. This company has agreed to bear $120,000 of the cost of the construction of a highway subway under the Fresno yard at Clinton avenue, to be built in the future when public convenience and necessity require it.

TEXARKANA UNION STATION.—It is expected that the contract for the construction of a union station at Texarkana, Ark., to serve the Missouri Pacific, the Texas & Pacific, the St. Louis Southwestern and the Kansas City Southern, bids for which were received until January 28, will not be awarded before March 5.

UNION PACIFIC.—A contract for the grading and placing of culverts on an extension from the end of the present Platte Valley line near Creighton, Wyo., to a point on the main line near Egbert, 54 miles, has been awarded to the Utah Construction Company, Ogden, Utah, at a cost of about $700,000. Work under this contract is expected to begin before February 22. Company forces will be employed in laying track and constructing timber bridges. The entire project, which is estimated to cost about $2,500,000, will be completed during December, 1928.

VICKSBURG BRIDGE & TERMINAL COMPANY.—Contracts for the construction of a combined railway and highway bridge across the Mississippi river at Vicksburg, Miss., which will be used by the Yazoo & Mississippi Valley and will when completed replace that railroad's existing ferry service between Vicksburg and Delta Point, La., have been awarded to the following contractors: for construction of the sub-structure for the river spans, to the United Engineers and Constructors, Inc., Philadelphia, Pa., for construction of the sub-structure for the west approach trestle, to the Virginia Bridge & Iron Company, Roanoke, Va., for grading of the embankment in the west approach, to J. A. Kries and Son, Knoxville, Tenn., for construction of the superstructure of the river spans and the east end of the bridge trestle and the superstructure of the west approach trestle, to the American Bridge Company. The cost is estimated at $3,000,000.

Binghamton Crossing Improvement

The New York State Public Service Commission, supplementing its order issued last November, has prescribed numerous details of the work to be done in Binghamton to eliminate 22 grade crossings in that city at an estimated cost of $2,200,000. This work will do away with all railroad crossings at grade in the city of Binghamton. The roads interested and the probable share of the cost to be borne by each are as follows: Erie, $513,000; Delaware, Lackawanna & Western, $522,000; Delaware & Hudson, $65,000.

THE CANADIAN RAILWAY CLUB will hold its next meeting on March 13 at Montreal, Que., when a paper will be read on the subject, "Railway Law," by Frederick Collins.

Financial

BALTIMORE & OHIO.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon part of its Patuxent branch, between Savage and Guilford, Md., about 2.5 miles.

BALTIMORE & OHIO.—*Trackage Rights.*—The Interstate Commerce Commission issued a certificate dated February 7 authorizing the Baltimore & Ohio to operate through passenger trains under trackage rights over the lines of the Reading Company and the Central of New Jersey between Park Junction, Philadelphia, Pa., and New York, in accordance with contracts entered into under date of August 28, 1926.

BAY TERMINAL.—*Car Trust Obligations.*—The Interstate Commerce Commission has approved an issue of $369,475 car-trust obligations to be issued to the Toledo Trust Company in connection with the purchase of 200 tank cars, having a total approximate value of $350,225.

CHICAGO & EASTERN ILLINOIS.—*To Become Member of Terminal R.R. Association of St. Louis.*—This company has applied to the Interstate Commerce Commission for authority to become a member of the Terminal Railroad Association of St. Louis by acquiring 2058 shares of its stock and assuming its share of the liability in respect of securities issued by the Terminal association. It has used the terminal facilities for 20 years on a tenant basis.

GREAT NORTHERN PACIFIC. — *Merger Hearings.*—The fourth hearing before representatives of the Interstate Commerce Commission on the proposed merger of the Great Northern and the Northern Pacific was held at Tacoma, Wash., on February 6 to 8 with the State of Washington protesting against the merger and Oregon supporting the consolidation. The former State, with the exception of Spokane and Seattle, contended that the merger would in large measure eliminate competition to the detriment of service; that an expected annual saving in operating costs of $10,000,000 would not be reflected in lower freight rates, but would go to the benefit of the stockholders of the three roads; that consolidation would retard development in some sections of the state by lessening the incentive for building railways into non-competitive territory; and that several communities—notably Vancouver, Auburn and Everett—would suffer immediately by the removal of shops and reductions in payrolls.

On the other hand representatives of Oregon testified that that state's support of the merger is based on the needs of the producers and shippers of the northwest as a whole. The Port of Seattle filed a petition of intervention without indicating opposition to the consolidation but asking unification of dock facilities at Seattle in the event the commission grants the application of the Northern lines. Petitions in intervention were presented from 36 points in Montana and Idaho but many were denied when it was indicated that the interventors were depending upon an outsider to speak for them, Examiner Mehaffie ruling that where witnesses had no connection with the intervening bodies or no personal knowledge of their official actions they were not qualified to represent them.

Rebuttal testimony will be taken at Washington, D. C., beginning March 19.

NEW YORK, NEW HAVEN & HARTFORD.—*Common Dividend.* — Directors at a meeting in New York on Tuesday declared a special dividend of $1 a share on the common stock, the first payment on this issue since December, 1913. The following statement was issued following the directors' meeting:

"The Board of Directors has declared a special dividend of $1 per share on the common stock of the N. Y., N. H. & H. Railroad Co., payable out of the net earnings or actual surplus on April 10, 1928, to stockholders of record at the close of business, March 9, 1928. This special dividend does not signify or indicate further dividends on the common stock unless and until in the opinion of the board the net earnings and prospects for the future warrant a further dividend declaration."

The New Haven paid 10 per cent dividends from 1873 to 1895, except in 1890 when 7½ per cent was paid. From 1896 to 1912, the dividend rate was 8 per cent, and in 1913 7½ per cent was paid, and in 1914, a 1½ per cent payment declared in December, 1913, was paid.

PARIS-ORLEANS. — *Bond Offerings.*—A group of investment houses consisting of A. Iselin & Co., Halsey, Stuart & Co., Inc., Brown Brothers & Co., Hemphill, Noyes & Co., and Wood, Gundy & Co., Inc., anounced an offering on February 9 of $10,750,000 5½ per cent external sinking fund bonds, due March 1, 1968 at a price of 96 and interest giving a yield of over 5.75 per cent.

These bonds are the direct obligation of the Paris-Orleans Railroad Company, ranking pari passu with all other outstanding debts of the company. Payment of interest and sinking fund on these bonds and upon all other outstanding capital liabilities of the company is provided by the operating receipts of the company and, under the terms of the Convention between the French railroad companies and the French government ratified by the law of October 29, 1921, by

1. The common fund of all the largest French railway systems into which fund the excess receipts of all systems are paid;
2. The payments which the French public treasury has undertaken to effect, if necessary, to make up any deficiency in the fund; and
3. The undertaking by the French government to bear the entire interest and amortization charges of any bonds which may be outstanding at the expiration of the concession of the company. The concession of the Paris-Orleans Railroad Company expires by its terms on December 31, 1956, and the payment of the interest and sinking fund of the bonds of this issue then outstanding will thereafter be borne by the state.

The purpose of this issue of bonds is to provide funds to retire the outstanding $9,640,000 principal amount of the Company's 7 per cent external sinking fund bonds, due 1954, which will be called for redemption on September 1st, 1928.

SEABOARD AIR LINE.—*Securities Authorized.* — The Interstate Commerce Commission has authorized this company to issue for pledge $5,212,000 of first and consolidated mortgage gold bonds, 6 per cent, series A, and $7,500,000 of 3-year 5 per cent secured notes, series A, to be sold to a syndicate composed of Dillon, Reed & Co., and Landenburg, Thalmann & Co., both of New York City, at 97¾ per cent of par and accrued interest. Authority has also been granted to pledge as collateral security for these notes, $6,000,000 of first and consolidated mortgage gold bonds, 6 per cent, series A, including the $5,212,000 of bonds to be issued for pledge; $1,000,000 of Seaboard-All Florida first mortgage 6 per cent gold bonds, series A, and $3,000,000 of Seaboard-All Florida first mortgage 6 per cent gold bonds, series B.

SEABOARD-ALL FLORIDA. — *Bonds Authorized.* — The Interstate Commerce Commission has granted authority to the Florida Western & Northern, the East & West Coast Railway, and the Seaboard-All Florida to issue jointly $1,000,000 of Seaboard-All Florida first mortgage 6 per cent gold bonds, series A, and $4,529,000 of Seaboard All-Florida first mortgage 6 per cent gold bonds, series B, the bonds to be delivered to the Seaboard Air Line in reimbursement of an equal amount of advances made by that company to the Florida Western & Northern and the Seaboard-All Florida for capital purposes.

Authority has also been granted to the Seaboard Air Line to assume obligation and liability as lessee, guarantor and indorser in respect of $1,000,000 of series A and $4,529,000 of series B bonds, and to pledge or repledge all or any part of these bonds as collateral security for short term notes which it may issue within the limitations of paragraph 9, of section 20a of the Interstate Commerce Act.

SOUTHERN PACIFIC. — *Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a branch line extending from Aptos to Loma Prieta, Santa Cruz County, Cal., 3.298 miles. The line was built to serve lumber operations, but has not been operated for the past two years.

Average Price of Stocks and of Bonds

	Feb. 14	Last week	Last year
Average price of 20 representative railway stocks..	116.63	115.61	105.90
Average price of 20 representative railway bonds..	97.10	97.12	93.01

Dividends Declared

Southern Pacific Company.—1½ per cent, quarterly, payable April 2 to holders of record February 24.

Union Pacific.—Common, 2½ per cent, quarterly; preferred, 2 per cent, semi-annually, both payable April 2 to holders of record March 1.

Officers

Executive

R. L. Davis, trainmaster on the Kansas City, Mexico & Orient at San Angelo, Tex., has been promoted to assistant to the president, with headquarters at Wichita, Kan.

H. C. Couch has been elected president of the Louisiana & Arkansas, with headquarters at Texarkana, Ark. **W. C. Ribenack** has been elected executive vice-president, with headquarters at Texarkana. **J. A. Buchanan,** vice-president and secretary at Texarkana has been elected vice-president, with the same headquarters. **C. S. McCain** has been elected vice-president, with headquarters at New York, and **C. P. Couch** has been elected vice-president with headquarters at Dallas, Tex. **B. S. Atkinson,** traffic manager, with headquarters at Texarkana, has been elected vice-president, with the same headquarters. **C. G. Lunday,** vice-president and general manager at Minden, La., has been elected vice-president, with the same headquarters.

John Leslie, vice-president and comptroller of the Canadian Pacific, with headquarters at Montreal, Que., has been appointed vice-president in charge of finance, with the same headquarters, succeeding **Isaac G. Ogden,** deceased. Mr. Leslie was born in Toronto, Ont., and was educated in the model and normal

John Leslie

schools and in the Collegiate Institute. He entered railway service as a junior clerk on the Toronto, Grey & Bruce (now part of the Canadian Pacific), filling the positions of cashier, general accountant and general auditor. In 1884 when the railway was taken over by the Canadian Pacific, Mr. Leslie became chief clerk in the accounting department, and was later appointed auditor of disbursements. He was appointed assistant comptroller in 1908 and comptroller in 1914, and from 1918 on was in entire charge of the company's accounting department in all its branches. In January, 1926, Mr. Leslie was elected vice-president and comptroller, which position he was holding at the time of his recent appointment as vice-president in charge of finance.

Financial, Legal and Accounting

E. E. Lloyd, assistant comptroller of the Canadian Pacific, with headquarters at Montreal, Que., has been appointed comptroller, with the same headquarters, succeeding **John Leslie,** promoted.

W. R. Evans has been appointed land and tax commissioner of the St. Louis, San Francisco & Texas and the Ft. Worth & Rio Grande, with headquarters at Ft. Worth, Tex.

G. T. Deibert has been appointed right of way and tax agent of the Chicago, Rock Island & Gulf, with headquarters at Ft. Worth, Tex., succeeding **W. F. Gorman,** who has resigned.

L. Garrett has been elected secretary of the Louisiana & Arkansas, with headquarters at Texarkana, Ark., and **Randolph G. Pack** has been elected assistant secretary, with headquarters at New York.

F. D. Ferry, purchasing agent of the Louisville, Henderson & St. Louis, with headquarters at Louisville, Ky., has been elected secretary and treasurer, with headquarters at the same point, succeeding **Ridgely Cayce,** deceased.

C. S. Pope, auditor of miscellaneous companies of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn.; has been appointed assistant to the comptroller, with headquarters at the same point, and his former position has been abolished.

Operating

Ferdinand M. Christen, acting superintendent of dining and sleeping cars of the Minneapolis, St. Paul & Sault Ste. Marie, has been promoted to superintendent of dining and sleeping cars, with headquarters at Minneapolis, Minn.

E. K. Kieffer has been appointed assistant superintendent of the Kansas City, Mexico & Orient, with headquarters at San Angelo, Tex. **O. W. Ervin** has been appointed trainmaster at San Angelo.

J. A. Quick, chief clerk to the superintendent of the Pacific Great Eastern, has been appointed acting superintendent, with headquarters at Vancouver, B. C., succeeding **H. M. Graham,** who has resigned because of ill health.

T. Hambley, master mechanic of the Algoma district of the Canadian Pacific, with headquarters at North Bay, Ont., has been promoted to assistant superintendent of motive power of the Western lines, with headquarters at Winnipeg, Man., succeeding **A. Sturrock,** who has been given an indefinite leave of absence because of illness. **Edward G. Bowie,** division master mechanic of the London division, with headquarters at London, Ont., has been promoted to master mechanic of the Algoma district succeeding Mr. Hambley. **H. Smith,** locomotive foreman on the Ontario district at Toronto, Ont., has been promoted to division master mechanic of the London division to replace Mr. Bowie.

Gifford D. Wadsworth, who has been appointed assistant general manager of the Quebec Central, with headquarters at Sherbrooke, Que., was born on July 15, 1884, at Sherbrooke, Que. He en-

Gifford D. Wadsworth

tered railway service in November, 1889, as messenger boy on the Quebec Central, and from November, 1900, until October, 1904, was consecutively clerk in the car service department and stenographer to the superintendent. From October, 1904, until January, 1906, Mr. Wadsworth served as clerk and stenographer in the general freight and passenger department, and at the latter time became chief clerk in the same department, remaining in this position until March, 1916, when he was appointed assistant general freight and passenger agent. In January, 1918, he was appointed general freight and passenger agent, which position he was holding at the time of his recent appointment as assistant general manager.

J. G. Elliott, assistant trainmaster on the Cleveland and Pittsburgh division of the Pennsylvania, with headquarters at Wellsville, Ohio, has been transferred to Cambridge, Ohio. **T. L. Grady,** assistant trainmaster on the Allegheny division, with headquarters at Oil City, Pa., has been transferred to Wellsville, succeeding Mr. Elliott. **M. F. Lewis** has been appointed assistant trainmaster at Oil City, replacing Mr. Grady. **J. W. Morse,** assistant road foreman of engines on the Monongahela division, with headquarters at Uniontown, Pa., has in addition been appointed assistant trainmaster at that point. **J. G. Kulp** has been promoted to trainmaster on the Monongahela division, with headquarters at Uniontown, and the position of assistant trainmaster on the Allegheny

division, formerly held by Mr. Kulp, has been abolished. Mr. Kulp succeeds **J. L. Pringle** who has been transferred to the Conemaugh division, with headquarters at Pittsburgh, Pa.

Frank S. Mitten, who has been appointed superintendent of the Mahanoy & Hazleton division of the Lehigh Valley, with headquarters at Hazleton, Pa., was born on July 31, 1877, at Wyalusing, Pa. He entered railway service on November 24, 1893, with the Lehigh Valley, and from that time until 1902 was telegraph operator and relief agent and ticket agent of the P. & N. Y. division at Sayre, Pa. From 1902 until 1903 Mr. Mitten was clerk in the trainmaster's office of the same division at that point, and then served as car distributor at Sayre until 1906. From 1906 until 1910

Frank S. Mitten

he was train dispatcher on the Wyoming division at Sayre and at Wilkes-Barre, and from 1910 until 1912 served as chief train dispatcher and division operator of the Wyoming division at Wilkes-Barre. In 1912 Mr. Mitten was appointed trainmaster of the Wyoming division, serving in this capacity at Sayre and at Wilkes-Barre until 1926. On March 1, 1926, he was transferred in the same capacity to the Buffalo division, with headquarters at Buffalo, N. Y., which position he was holding at the time of his recent appointment as superintendent.

George Masten, who has been appointed general superintendent of the Virginian, with headquarters at Princeton, W. Va., was born on December 6, 1874, at Lincoln City, Del. He entered railway service on September 1, 1891, with the Atlantic & Danville (now the Norfolk division of the Southern). From 1898 until 1900, he was agent and dispatcher on the same road, and from 1900 until 1917, was dispatcher and chief dispatcher on the Denver & Rio Grande (now the Denver & Rio Grande Western). From 1917 until 1918, Mr. Masten served as chief dispatcher and trainmaster on the Seaboard Air Line, and from 1918 until 1920 as superintendent of the Tennessee Central. From 1920 until January, 1921, he was superintendent of the Norfolk & Portsmouth Belt. At the latter time he became superintendent of the Norfolk division of the Virginian, with headquarters at Victoria, Va. In 1927 he was transferred in the same capacity to Princeton, W. Va., and was superintendent there at the time of his recent appointment as general superintendent.

C. I. Luque, assistant superintendent of transportation of the Mexican, with headquarters at Mexico City, Mex., has been promoted to superintendent of transportation, with headquarters at the same point, succeeding **John J. Clarke,** who has retired from active service. Mr. Clarke was born at Oswego, N. Y., and entered railway service in 1880 on the New York Central & Hudson River (now the New York Central). Until 1906 Mr. Clarke's railroad experience included service with the operating departments of the Union Pacific, the Atlantic & Pacific (now parts of the St. Louis-San Francisco and the Atchison, Topeka & Santa Fe), the Mexican National (now the National of Mexico) and the Interoceanic (now a part of the National of Mexico). He then entered the operating department of the Mexican and in 1909 he was appointed acting superintendent of transportation. From 1913 to 1920 Mr. Clarke was connected with the Peruvian Central Railway and he was then appointed superintendent of transportation of the Mexican, occupying that position until his retirement.

Traffic

F. P. Nelson has been appointed division freight and district passenger agent of the Canadian National, with headquarters at North Bay, Ont.

C. N. Gray, general agent for the Denver & Rio Grande Western at Dallas, Tex., has been transferred to St. Louis, Mo.

Edward Campbell, assistant general freight agent of the Bessemer & Lake Erie, with headquarters at Pittsburgh, Pa., has been appointed general freight agent, with the same headquarters.

L. H. McCormick, general agent in the passenger department of the Chicago, Rock Island & Pacific at Chicago, has been promoted to assistant general passenger agent, with headquarters at the same point.

W. T. Paige, traveling freight agent for the Canadian National in the Memphis territory, with headquarters at St. Louis, Mo., has been promoted to general agent, with headquarters at Memphis, Tenn., in charge of a newly established office at that point.

Paul S. Phenix, assistant general freight agent of the Baltimore & Ohio, with headquarters at New York, has been appointed general New England agent, with headquarters at Boston, Mass. He will be succeeded as assistant general freight agent at New York by **Harry Atkinson.**

L. E. Ayer, general agent of the Canadian National at Kansas City, Mo., has been transferred to Detroit, Mich., succeeding **H. H. Hamill** who has been appointed coal traffic agent at Detroit. **Anthony Pick,** formerly with the Grand Trunk Western freight department at Chicago, has been appointed general agent at Kansas City, succeeding Mr. Ayer.

John F. Sullivan, assistant general passenger agent of the Texas and Louisiana lines of the Southern Pacific, with headquarters at Houston, Tex., has been promoted to general passenger agent of the Texas lines with headquarters at the same point, succeeding **W. C. McCormick,** who has been transferred to the Louisiana lines, with headquarters at New Orleans, La. **Ed McClannahan,** assistant general passenger agent of the Texas and Louisiana lines, with headquarters at El Paso, Tex., has been transferred to Houston, Tex.

Mechanical

E. H. Schaubel has been appointed superintendent of electrical activities of the Northwestern Pacific, with headquarters at Sausalito, Cal., succeeding **F. T. Vanatta** who retired from active service with this company on February 1.

J. R. Hayden, assistant superintendent of the car department of the Missouri-Kansas-Texas Lines, with headquarters at Denison, Tex., has been promoted to superintendent of the car department, with headquarters at the same point.

J. C. Harris, general road foreman of motive power and equipment of the Texas and Louisiana lines of the Southern Pacific, with headquarters at Houston, Tex., has been promoted to master mechanic of the El Paso division, with headquarters at El Paso, Tex., succeeding **William Bleick,** who has resigned.

C. K. Steins, assistant engineer of motive power of the Eastern region of the Pennsylvania, with headquarters at Philadelphia, Pa., has been appointed master mechanic of the Indianapolis and St. Louis divisions, with headquarters at Indianapolis, Ind., succeeding **O. C. Wright,** resigned.

F. G. Perkins, division master mechanic on the Algoma district of the Canadian Pacific, with headquarters at Schreiber, Ont., has been transferred in the same capacity to the Brownsville division of the New Brunswick district, with headquarters at Brownsville Junction, Me., succeeding **R. V. Carleton,** transferred.

Engineering, Maintenance of Way and Signaling

C. L. Bates, formerly in the engineering department of the Pacific Great Eastern and the Canadian Pacific, has been appointed engineer of maintenance of the Pacific Great Eastern, with headquarters at Vancouver, B. C.

J. M. Fair, division engineer of the Philadelphia Terminal division of the Pennsylvania, with headquarters at

Philadelphia, Pa., has been transferred to the Buffalo division, with headquarters at Buffalo, N. Y., succeeding **R. P. Graham,** who has been transferred to the Philadelphia Terminal division to replace Mr. Fair.

M. A. Bost, assistant engineer on the Chicago, Milwaukee, St. Paul & Pacific, at Minneapolis, Minn., has been promoted to division engineer of the Iowa and Dakota division, with headquarters at Mason City, Iowa. **Peter Jenny,** assistant engineer at Milwaukee, Wis., has been promoted to division engineer of the Superior division, with headquarters at Green Bay, Wis. **Frank R. King,** assistant engineer at Milwaukee, has been promoted to division engineer of the La-Crosse and Northern divisions, with headquarters at Portage, Wis. **N. F. Podas,** assistant engineer at Minneapolis, has been promoted to division engineer of the Twin City terminals, with headquarters at the same point. All of the appointments are to newly created positions.

Harry C. Sampson, who was promoted to superintendent of telegraph and signal engineer of the Chicago & Alton, with headquarters at Bloomington, Ill., on January 1, was for 14 years previous to that time signal supervisor of the Northern division at Bloomington. He was born on August 14, 1890, at Gardner, Ill. Mr. Sampson entered railway service on July 1, 1908, as a lampman on the Alton at Gardner and in 1910, he became an assistant signalman at Yard Center, Ill., on the Chicago & Eastern Illinois. In the following year he served in the signal department of the Illinois Central on the signaling of the third main track between Riverdale, Ill., and Matteson. Mr. Sampson returned to the Alton in 1912 on signal construction and in 1913 he was advanced to signal foreman. He was promoted to signal supervisor of the Northern division in 1914.

George K. Thornton, assistant to engineer maintenance of way of the Boston & Maine, with headquarters at Boston, Mass., has been appointed engineer of track, with duties as assigned and with headquarters at the same point. **John P. Canty,** division engineer, with headquarters at Greenfield, Mass., has been appointed assistant to engineer maintenance of way, with duties as assigned, with headquarters at Boston, Mass., succeeding Mr. Thornton. **Samuel P. Coffin,** division engineer at Boston, has been transferred in the same capacity to the Fitchburg division, with headquarters at Greenfield, succeeding Mr. Canty. **Timothy G. Sughrue,** division engineer of the Portland division, with headquarters at Salem, Mass., has been transferred in that capacity to the Terminal division, with headquarters at Boston, succeeding Mr. Coffin. **Robert H. Parke,** division engineer at Woodsville, N. H., has been transferred to the Portland division in the same capacity, with headquarters at Salem, Mass., succeeding Mr. Sughrue. **Henry C. Archibald,** bridge and building supervisor, with headquarters at Salem, has been appointed acting division engineer of the White Mountains-Passumpsic division, with headquarters at Woodsville, N. H. All of the above will report to the ingineer maintenance of way.

Obituary

Nelson B. Burr, vice-president of the St. Louis Southwestern, with headquarters at New York, died at his home in that city on February 11, after a protracted illness.

Williard Beahan, special engineer for the Erie and the New York, Chicago & St. Louis, Cleveland, Ohio, who died at Alma, Mich., February 5, was born on January 15, 1854, at Watkins, New York. He prepared for college at Starkey Seminary from which he graduated in 1873. After being graduated in civil engineering from Cornell University in 1878 Mr.

Willard Beahan

Beahan entered the service of the United States Engineering Corps and for one year served on a government project in Missouri. During a period of approximately 10 years he was employed on the Texas & Pacific in Texas, completing his service with that road as resident engineer. During the period from 1890 to 1905 Mr. Beahan served as division engineer for the Lehigh Valley; as superintendent of construction on the Cascade Tunnel (Great Northern); as general superintendent of streets for the city of St. Louis and as president of the firm of Anderson & Barr, contractors. During this period he also went to South America with the North & South American Construction Company in connection with the construction of railroads for the Chilean government. About 1900 he became division engineer for the Chicago & North Western which position he occupied until 1905 when he entered the service of the Lake Shore & Michigan Southern (now New York Central) as first assistant engineer at Cleveland, Ohio. He continued in this capacity until 1924 at which time he entered the service of the Nickel Plate as a special engineer. While in this capacity he had charge of the location work in the Clover Leaf district. More recently he has acted in special consulting capacities for both the Nickel Plate and the Erie.

E. A. Foos, fuel agent of the Baltimore & Ohio, with headquarters at Baltimore, Md., died on February 11.

George P. H. Becker, auditor of receipts of the Louisville & Nashville from October 21, 1897, to his retierment on November 30, 1926, died on February 7 at his home in Louisville, Ky., at the age of 75 years. Mr. Becker had completed 45 years of railroad service at the time of his retirement, 38 of which were spent in the accounting department of the Louisville & Nashville.

H. S. Garvey, general western agent of the Boston & Maine, with headquarters at Chicago, died in that city on January 5.

E. I. Sackett, at one time division superintendent of the Boston & Albany, with headquarters at Springfield, Mass., died there on February 14. Mr. Sackett was 83 years of age.

Joseph Lindsay, former division superintendent of the Great Northern, died on December 24, at Superior, Wis., at the age of 68 years. Mr. Lindsay served from 1911 to 1914 as trainmaster at Great Falls, Mont., and as division superintendent at Sioux City, Iowa, and Melrose, Minn. He entered railway service as a carpenter and had been a master carpenter at various points on the Great Northern until his entry into the operating department in 1911.

Malcolm H. MacLeod, formerly vice-president of construction of the Canadian National, with headquarters at Toronto, Ont., died there on February 8 from heart disease. Mr. MacLeod was born on July 13, 1857, at Isle of Skye, Inverness county, Scotland, and entered railway service in 1878 as a rodman on the Credit Valley (now part of the Canadian Pacific), and until 1894 was consecutively assistant engineer on construction and location engineer on various Canadian railways. From 1894 until 1896 he was engineer in charge of location and construction of the Lake Temiscamingue Colonization Railway, a branch of the Canadian Pacific, and from 1897 until 1898 was location engineer, assistant chief engineer and superintending engineer of the Crow's Nest Pass branch of the Canadian Pacific. From 1898 until the spring of 1900, Mr. MacLeod was chief engineer and superintendent of the Crow's Nest Pass division of the same road, and from 1900 until 1907, was chief engineer of the Western lines of the Canadian Northern (now part of the Canadian National). At the latter time he became general manager and chief engineer of the same lines, which position he held until 1918, when he became vice-president of the Canadian National. In September, 1920, he became vice-president of construction of the same road. In 1923 Mr. MacLeod was appointed consulting officer to the executive, and retired from this position in August, 1925.